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SOME of LEE'S IDEAS







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PRACTICAL HINTS FOR THOSE WHO WOULD HELP THEMSELVES  
— IN THE CONSTRUCTION OF —  
CONVENiences FOR USE ABOUT  
THE YARD, THE GARDEN AND THE FARM,  
WITH ESPECIAL REFERENCE TO  
POULTRY-KEEPING.

14

\*\*\* BY \*\*\*  
J. HENRY LEE,  
INDIANAPOLIS IND.



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## INTRODUCTORY.

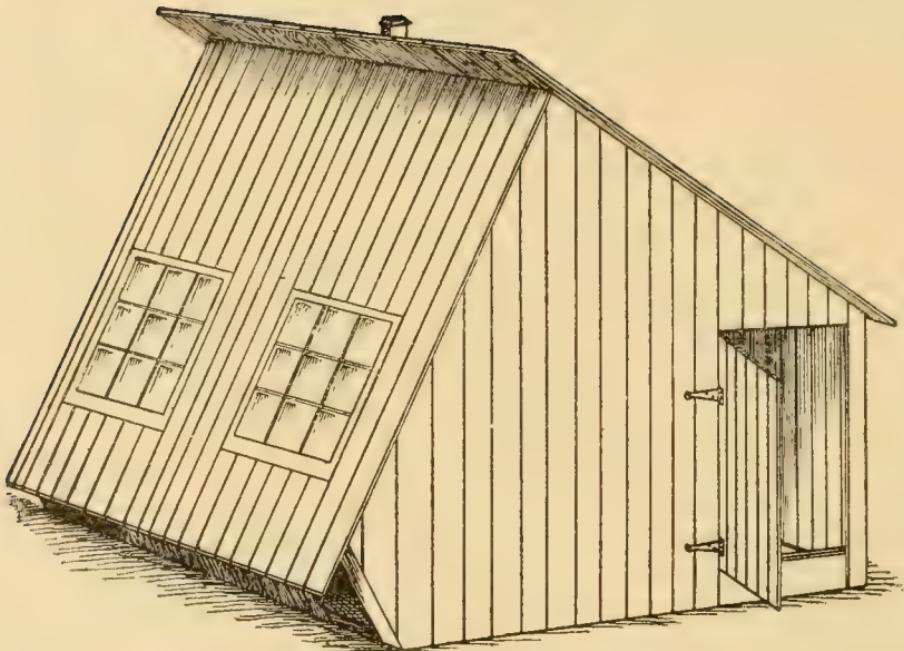
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THE one great idea with an American, in any enterprise, is that it must pay; and the constant study is to make it pay well. That business pays best in which the resources, of whatever nature, are managed with economy, — and by economy I do not mean merely an expenditure of the least possible amount of money, (which idea too often results in neglect and consequent waste,) — but I refer to the proper admixture of brains with business, so as to secure the best results obtainable. And if these results can, by more careful study, be reached with a smaller expenditure of cash than had before been considered necessary, so much the better for the business. That is what the average American aims at every time.

An example from the following pages will serve to illustrate my meaning fairly. The small wooden button, with a screw or nail in its center, has been used from time immemorial to fasten doors, because it is cheap and handy: to use it is economy. Yet, with a little thought, the idea is immensely improved by simply driving a small nail above the button: it is therefore truer economy to use this small nail, notwithstanding it is an added expense. That is the key-note of this book, — to present ideas that are useful, cheap, convenient, and (what is these and more) economical in the truest sense of the word. Many of the ideas advanced are original, — I cannot claim that they all are; possibly some are not the best of their kind, — there may be a difference of opinion as to that.

It is not within the province of this work to argue that poultry-keeping pays; those who have kept poultry, with brains, know that it pays, while those who have failed at the business are past all hope and this book will never reach them. That it will be a practical benefit to those who are now keeping poultry, and to others as well, is the hope of

THE AUTHOR.



HOUSE DESIGN NO. I.

## GENERAL OBSERVATIONS.

A CARPENTER need not be hired to make the conveniences about to be described; the average owner of a home will prefer to make the improvements himself, at odd times, and they are specially designed with this in view, — even the buildings will not be found beyond the capacity of ordinary intelligence. And there is a satisfaction in applying the improvements one's self, — not to mention the saving of expense. The tools needed are generally the property of any householder, but they can be purchased at small cost as compared to hiring the work done. The necessities are a saw, a hatchet, a square, a screw-driver, a three-corner file and a pocket knife, — a surprisingly short list, — to which might be added for convenience, a pair of combined wire-cutters and pliers and an anvil; however a very serviceable substitute for these can be made by driving an axe into the end of a heavy block for the anvil and two large spikes driven deep at one corner of the same block, about an eighth of an inch apart, will serve for shaping wires and holding them while being filed. A smoothing plane and a brace, with two or three sizes of bits for it, might be added. All of these tools, of good quality, including the axe, can be bought for not to exceed ten dollars. The lumber can be purchased ready-dressed on one or both sides, as required; old boxes

will many times supply the boards wanted. Wire-nails are best for most purposes and a given weight contains a greater number than of common nails; smooth wire-nails are the most generally useful, and where great security is desirable the trick is easily learned by which a gentle squeeze and twist of the wire-cutters will raise a pair of barbs near the point of the nail.

\* \* \* \* \*

## BUILDINGS.

**H** SUITABLE house is the first consideration in the profitable care of poultry, whether for home use or market, or the fancy, so-called. An expensive building is by no means a necessity; and on the other hand the time has almost gone by when feathered-stock is required to shift for itself. Hens that pay their owners a profit while compelled to roost in trees, do not deserve to live. The best location is on dry and slightly sloping land, with a southern exposure. But when this is not available, any dry situation should be chosen, or sufficient earth filled in to provide for this. Dryness is imperative.

Believing that a cheap house might be an advantage to some, and perhaps induce others to give their fowls better accommodations than the too-frequent open shed I designed the house illustrated on the opposite page,

several years ago. The full details of its construction were published at that time in the Poultry Bulletin, N. Y., the American Poultry Journal, Chicago, and I believe in some of the other prominent fanciers' periodicals; and I am told that the design has been adopted both in a small way and on extensive farms; it is well adapted for use in the colony plan or it can readily be extended to an indefinite length. The original house is still in use in my yard.

The original plan allows for one hundred square feet of floor-space, which is divided into two pens to accommodate two pens of fowls or a pen of breeding fowls and their chicks. It is 10 feet square, facing south, with common window sash for light and warmth. It is a common mistake to fill the whole side of a poultry house with glass; beside the unnecessary expense, this is inimical to the health of poultry confined in such a building at the season when the warmth which it is intended to supply, is most needed; the sunshine during the day will warm up the house more thoroughly than if a smaller surface of glass were used, but a second thought will remind us that the large surface of glass also reduces the temperature very rapidly and thoroughly at night; moisture is thus precipitated from the warm air upon the inner side of the windows to such an extent that the glass is soon completely covered with ice, and the lee side of a snowbank is warm, in com-

parison. The amount of glass shown in the house illustrated, is sufficient to afford the necessary light, and at the same time, it furnishes a warm spot on the floor for the fowls to bask in, when confined during severe weather, without subjecting them to extremes of temperature each day. Glass is one of those good things of which too much is bad; a poultry-house can't be properly heated by it.

In summer, when the sun's rays fall perpendicularly, the slant of the sash in this house keeps the floor in shade, while in winter, when the sun is much further south, its rays penetrate even to the rear wall, and thus every part of the floor receives the benefit of their influence, during the course of the day. In a later page of this book, I will carry this idea of utilizing and avoiding sunshine, still further.

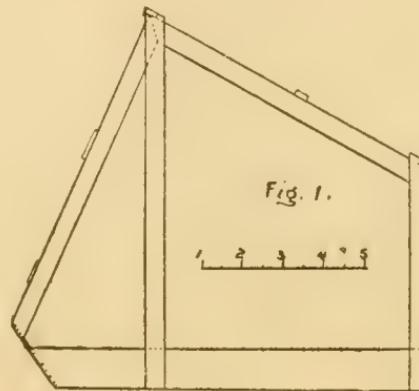
Having selected a site for the building, the first item to be considered, in its construction, is whether or not it must be rat-proof; this is to be considered, whether a foundation is placed under the house or not. By my plans, no foundation of any sort, is required; I do not even use sills, and the house is also built without corner posts. A house practically without frame or foundation may seem entirely wrong to a professional builder but, as durability is not sacrificed, I have ventured to set aside the ordinary rules thus far, thereby cutting off a large part of the expense. The surest way to head off

the rat burrow is to bury pieces of tin or sheet-iron a few inches underground on both sides of the wall, — old stove-pipe, or anything which the rat cannot penetrate; of course a brick or stone foundation, set deeply into the ground, will keep the rats out; likewise tin, or other such material, if placed perpendicularly, would accomplish the same purpose; but it is generally more convenient to lay the material flat and cover it with earth, banking against the wall on both sides. This protection must be placed inside of the house, as well out, — otherwise his ratship will burrow from the unprotected side, and doubtless be glad to have a tin roof over his head. A foot or so each way is all that is necessary, because the rhodont always begins his mining operations near the wall.

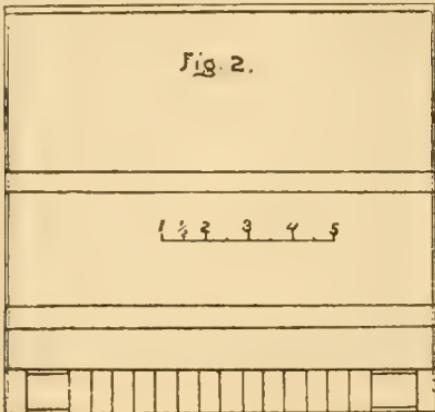
As before stated, I designed this house with the idea of making it as cheap as possible; its size, — 100 square feet of floor-space, — is very convenient for ordinary use, and the cost of the one I built, was as follows:

240 feet of eight-foot fencing, at \$14.50 per thousand, cost,	\$3 48
200 " " ten-foot flooring " 16. " " . . . . .	2 96
4 ten-foot boards, 12 in. wide, 18. " " " . . . . .	72
3 2x4 scantling, ten feet long. . . . . . . . . . .	21
2 bundles lath, . . . . . . . . . . . . . . . . .	30
2 second-hand sash, . . . . . . . . . . . . . . . . .	1 00
20 pounds of tarred paper, at 3 cents per pound, . . . . .	60
1 pair half-strap hinges, with screws, . . . . . . . . .	15
Nails, etc., and paint, . . . . . . . . . . . . . . . . .	58
Total	\$10 00

The fencing and flooring came in six inch widths. To begin the construction, first saw 20 of the fencing boards to a uniform length of six feet; these are for the rear wall. The scrap ends are then to be trimmed all to two-foot lengths, for the lower part of the front wall, a fencing board being ripped in two strips, to which these scraps are nailed, as shown in Fig. 2; two boards near each end, are left for the doors for the fowls. This done, all is ready for nailing together the base of the whole house; three of the wide boards are used for the base and the fourth for the partition. The front base slants outward, as shown in Fig. 1.



The frame is then constructed by erecting a long fencing board at three feet from the front end of each side base and a shorter one at the rear ends, as shown in Fig. 1, (which shows these boards trimmed to fit under the roof.) These two sets of uprights are then connected by scantlings, for the roof, scantlings being required to give the necessary strength to the roof; under the ends of these scantlings, fencing boards are nailed, uniting the uprights; the third scantling is then fastened in place, midway between the others. The top of the two longest uprights is then connected with the front base, by a fencing board, and two boards nailed



across the front, to support the sash. The whole frame is then complete and ready to be enclosed. Figs. 1 and 2 show side and front details of the frame. Fencing boards are used on the sides and back and flooring for the roof and front; flooring is best for roof and front, because, being smooth, it sheds the rain readily, and being tongue-and-grooved, there is no trouble with leaks. The sash are adjusted in their proper places, with strips of tin above them to turn water, before the boards are nailed on. The cracks on the sides and back of the house are stripped with lath; the inside of the house is lined with tarred paper; and the roof and front are painted with a cheap mineral paint. This makes the house sufficiently warm for winter in almost any northern latitude; for the South the tarred paper might be dispensed with, but it is an advantage anywhere as a disinfectant and also because it is very disagreeable to all kinds of vermin; and preventive measures must be taken against lice wherever the English sparrow is found. The roof might be painted with tar, instead of mineral paint, as the slant is not enough to run it off in hot weather.

The partition is made of lath, nailed closely, on the broad base board, a narrower board being used for the top. Enough scrap pieces will be left to make dust and nest boxes, roosts, etc., and the arrangement of these can be made as best suits the convenience of the owner.

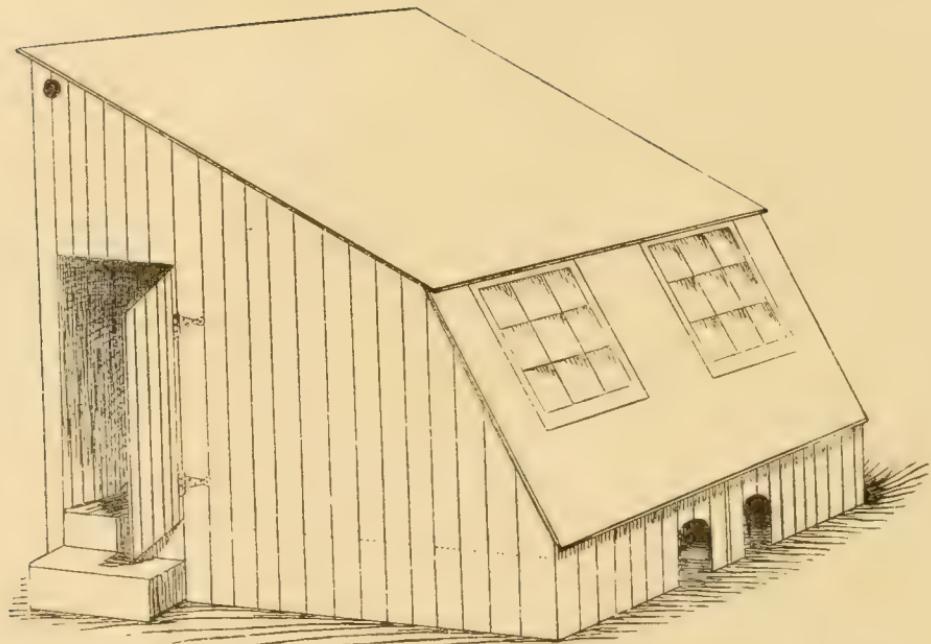
The gate in the partition rests on the top of the base-board; this prevents sagging and leaves the base-board unweakened. The same principle is applied in the construction of the yard gates, as will be explained later. The small doors in the front base are raised and lowered by cords, which can be reached while standing at the main door; these cords pass over home-made pulleys, and each is attached to an iron bolt on its door which is heavy enough to fall into its socket when released. I arranged this to fasten or unfasten the door by the lifting-cord, and it was very satisfactory; but I found, in use, that the mud from the feet of the fowls in moist weather, would accumulate in the socket into which the bolt was expected to drop, and thus interfere sometimes, with its free movement. For this reason, I have practically abandoned these doors, adopting a vertical door, which is so constructed that no lever can be inserted under it by a thief, or has an automatic fastening above it, which will be described and illustrated in that part of this book specially devoted to the subject of doors.

Ventilation can be provided in either of two ways. Holes can be cut at the top of each side wall, thus supplying "top ventilation," and these holes may be covered with a movable shutter, by which to regulate the size of the opening, according to the temperature, the number of fowls housed, or any other condition which

may arise. However, the ventilator most commonly employed is a tube made by nailing together 4 boards long enough to extend from a point near the floor at the center of the house, out through the roof. Each style of ventilator has its special advantages, and the builder can choose for himself; the important point about a ventilator is to avoid subjecting the fowls to a draft at night.

My perches are placed at the center or each compartment; they rest on blocks nailed to the side walls and to the partition. The perch is two inches square, with the corners rounded off, made of proper length to spring into place firmly. They can be removed when occasion requires, and are not in the way, like benches, when not in use, as they can be leaned up in one corner of the house. Young birds of the Asiatic and American classes should not be permitted to sit upon perches of any sort until the "keel-bone" is well past the gristle state. The dust-bath must be placed under the window, as chickens will not use it in a dark or cold place, in winter.

It will be readily seen that this house can be extended to any length desired, by using three posts every ten feet, to support the roof, a partition at these posts taking the place of the end wall in the original plan.



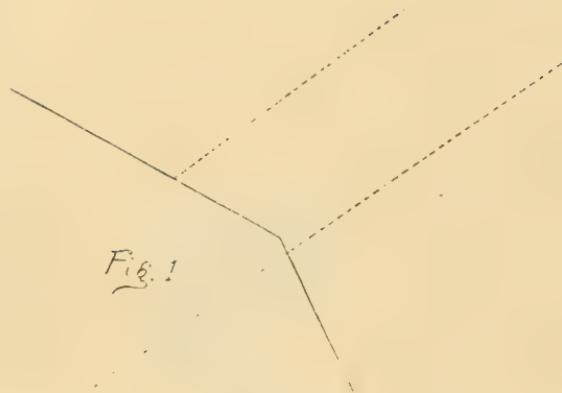
HOUSE DESIGN No. 2.

• • • A MODEL HOUSE. • • •

**B**UT a thoroughly good and convenient house is more often desired than one in which the greatest recommendation is its cheapness. I have therefore designed a house which possesses about all the features really desirable in a house, I think, and which can be built at a small cost, also. In connection with the other conveniences which I shall describe, I believe little is left to be desired, in the ordinary range of poultry keeping. The illustration on the opposite page gives a perspective view. No attempt at architectural beauty has been made, but a careful reading of the description will, I think, convince anyone that it is "built for business." Reasons why are all pointed out.

This building is of the same dimensions as the one first shown, viz., 10 by 10 feet, and is 12 feet high at the rear, the roof sloping to a height of eight feet from the ground, at the top of the sash. The change in the direction of the slope of the roof is practically the only difference in the external design of the two houses; the slope and length of roof are the same, the slope of front the same and the windows are in the same position. The reason for the change in the direction of the roof

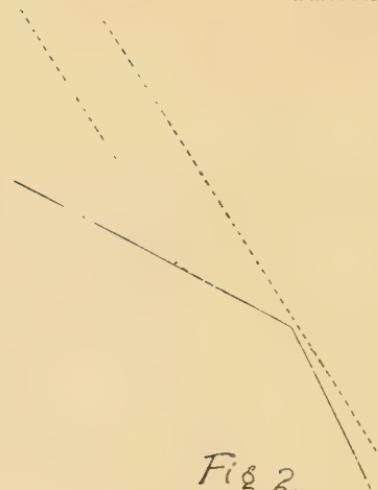
was hinted at a few pages back. I noticed, in winter, that the snow or sleet would stay on the roof of house No. 1, long after the front had become perfectly dry in the sunshine. The difference in angle would make a less amount adhere to the front, of course, but this did not fully account for it all; investigation developed the fact that the sun's rays touched the roof at such an angle as to make them powerless. This is true of any roof having a northern aspect. It therefore became advisable to reverse the slant of the roof, to give the sun a fair chance. Warmth is desirable, and, if the elements can serve or harm us, they should be looked after. If the sun shines squarely against the roof, it will remove the snow or ice or morning's frost quickly, and a dry roof is certainly better, in every way, than an icy roof. We therefore find that house design No. 2 not only admits the sunshine, for light and warmth, to almost the whole floor of the house, but also takes advantage of the same element to secure the best possible conditions all around, in the winter season. The principles I have pointed out apply, also, to our advantage, in summer, in house design No. 2. Glance at Figs. 1 and 2, next page,—the dotted lines representing the



*Fig. 1*

WINTER SUN.

sun's rays, the others representing the slant of the roof and windows, of house No. 2. It will be noticed that in winter the rays enter the window and also strike the roof squarely; but, in summer, when the sun is much further to the north, its beams cannot enter at the window and they touch the roof at the angle at which our winter experience demonstrates they have the least power. Thus this design utilizes the sun's warmth to



*Fig. 2*

SUMMER SUN.

the best advantage, in winter, and avoids it, as much as possible, in the heat of summer.

In this design the roof projects out over the top of the windows sufficient to shed water, but does not obstruct the light; this makes the tin flashing used above the sash in house No. 1, unnecessary in this design, which is an advantage, because such work, even when done by a practical roofer, is not always free of leaks.

If it seems inadvisable to allow the water from the roof to flow over the windows, the common form of cheap gutter can be erected on the roof, without obstructing the light in the least. This gutter is made by fastening a narrow board vertically on its edge, near the lower edge of the roof and filling the angle with a board, which has been tapered to about a half-inch width at the outlet end. Tin is then shaped over these strips and tacked to them and to the sheathing of the roof. The shingles, or other roofing materials, are then made to lap over the upper edges of this tin covering. No doubt the water can, in most cases, discharge from the end of the gutter, no spouting being necessary.

As before remarked, a poultry house should front towards the south. If located on a city lot which fronts north, I find some will cling to the idea that the house must be placed at the rear end of the lot, and consequently cannot have a south front; this is a mistake, because, if a space is to be allotted to the fowls, their house can be located at the front of that space, or in the middle of it, and would be more safe from depredators, if so located. On a lot which extends east and west, the building may be located at the side of the space set apart for poultry. In this, as in other affairs, "what is worth doing at all, should be done right."

Perhaps the most important difference between the two designs is in the floors. No. 1 has an earth floor,

which is kept covered with straw or other litter. No. 2 has a floor made of tongue-and-grooved stuff, and this floor is two feet above the ground. If we study the subject of floors, we find the first essential is dryness; this is secured by an elevated floor better than in any other way. Again, the trouble with rats is avoided; the precautions against these pests, detailed in the last chapter, are unnecessary with design No. 2. A board floor on, or a few inches above, the ground, forms a capital retreat for the rat, as well as for other small animal pests; the elevated floor, with dust underneath it, as is contemplated in this design, furnishes no such harbor, and the animal, of whatever kind, which attempts to burrow into this house, finds the dust in its nose anything but agreeable; however, if it should be courageous enough to not turn back, it would find itself in an empty room, no nearer the fowls than before entering, and its place of entrance clogged with dust. The floor is made tight to avoid drafts about the fowls, thus insuring their comfort, and to keep the litter and droppings where they should be,—which is not in the dust-bath. The location of the floor is indicated by the dotted line, in design No. 2.

If the flooring boards are sawn into short lengths, to be put in the house crosswise, only three joists will be needed for each half of the house; and 2x4 scantlings will answer very well for joists. My idea is that the

partition should be made to extend from the ground up through the floor, be made of lath nailed to a board at the ground but not at the floor; the lath to be about a half inch apart, or so close that the fowls cannot pick at each other, or very small chicks creep through the cracks. The ordinary length of lath is four feet; this places the strip to which the upper ends of the lath are nailed, at two feet above the floor, — the proper height for the perches, where my method of arranging the perches is adopted. A second course of lath is placed above this, to make the partition of proper height; it will then extend above the floor six feet, which is just the height of the roof at its lowest part, and sufficient to turn back almost any "flyer." A partition thus constructed, leaves a series of small holes, at the floor-line, which form a part of the system of ventilation employed in this house; this will be fully explained later on. The believer in no ventilation is at liberty to make the floor solid, and erect the partition above it.

Fig. 3 shows the end elevation of this house. The door can, of course, be placed at whichever end is most convenient. The line of dashes, marked F, shows the location of the floor, two feet above the ground. The roof, at its highest point, is twelve feet from the ground and at the lowest, eight feet. The door is six feet high and three feet wide. A battened door, as here shown, answers every purpose as well as a more expensive

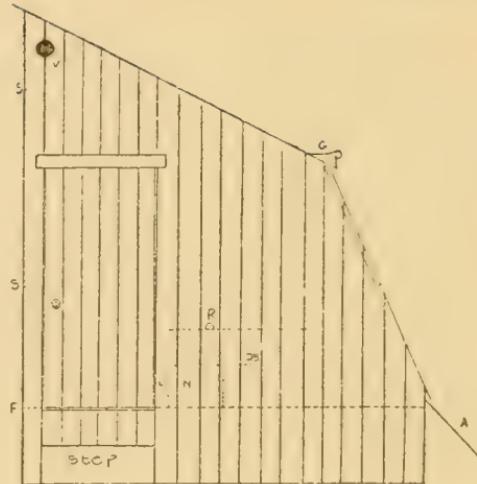


Fig. 3:— END ELEVATION.

style. It is made of the same material as the sides of the house, —tongue-and-grooved stuff,— and the battens which are nailed very firmly at about a foot from the bottom and eighteen inches from the top, may be of the same material, also. The position of the perch is indicated at R, with drop-board DB beneath, covering nest-box N, which has a lid, L, to open outward when

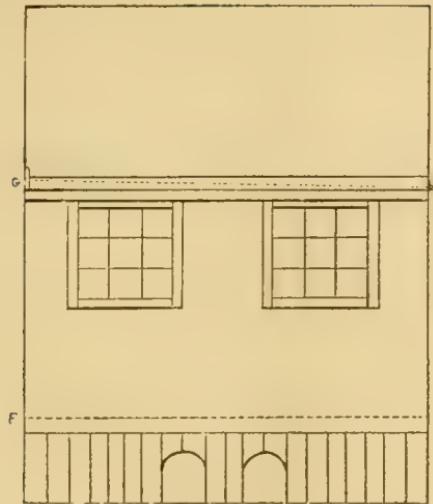


Fig. 4:— FRONT ELEVATION.

gathering the eggs. This is the usual method of arranging perches and nests, and is not objectionable in any way; but I will explain a better arrangement, when I touch that subject, in its proper place. The closed end of the gutter described on page 13, is shown at G. At A the front base of the house is shown raised to keep the house cool, in summer; in winter this front

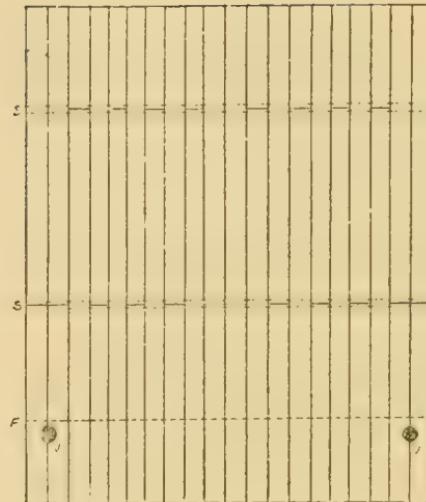


Fig. 5:— REAR ELEVATION.

is fastened down, for warmth. One of the upper ventilators, v, is located at each end of the house. The references F and G, are the same in Fig. 4 as in Fig. 3. The dotted line in G shows the position of the tapered strip which forms the bottom of the gutter, (see p. 13.) In Fig. 5, F is the floor-line and v v the lower ventilators. All the ventilating holes should be covered with

wire-cloth, such as is used for window and door screens, to keep out small animals and birds. Fig. 5 shows the method of cutting the boards to best advantage and applying them to avoid weakening the structure; this is technically known as "breaking the joints." The ends of the boards are made to meet alternately upon the two scantlings, (represented by the dotted lines at *s s.*) to which they are nailed. The height of this wall is twelve feet, and the two scantlings give the necessary firmness to that length of tongue-and-grooved stuff. The upper ends of these boards will be nailed to the scantling which supports the roof, and an inch board will be strong enough for the lower ends.

In other respects than those noted in this chapter, house No. 2 is to be constructed by the details given for No. 1; no foundation, no sills, no posts. If a brick or other foundation is deemed desirable, it will only be necessary to add eight short posts, (at each corner and at the center of each side,) extending from the joists which support the floors down upon the foundation. The roof is supported by three scantlings; is made of common boards covered with roofing-paper or shingles, and the slanting front is made same as the roof.

In the floor plan, Fig. 6, *D* is the door, *R R* the perches, *DB DB* the boards under the perches to catch the droppings, and beneath these boards a place for the nests. This is the usual arrangement, but my plan

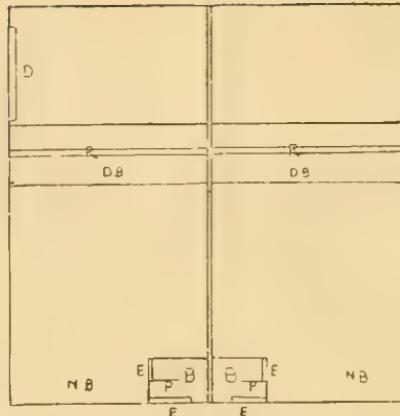


Fig. 6:— FLOOR PLAN.

is different. As only a few fowls are expected to be kept in each side of this house,— a "breeding-pen" consists, ordinarily, of from seven to twelve birds, according to the variety, and not over twenty birds should ever be housed together, at any time,— it will be a waste of time to clean up the house daily. But the dropping boards soon become very unsightly; I therefore discard them altogether. My plan is to fasten a strip on each outside wall at the proper height to support the end of the perch,— see the dotted line un-

der R, in Fig. 3, p. 14. This is the same height as the top of the first course of lath in the partition, as mentioned on p. 14; and the inner end of the perch is to rest on the cross-piece of the partition, or on a strip fastened to it. The perch is long enough to spring into its place firmly, and it should be removed during the daytime to be located at a different point for the next night. I recommend the removal of the perches during the daytime, when the fowls are confined to the house by severe weather, as they will take more exercise if there are no convenient perching-places. Exercise is absolutely necessary to keep the fowls in good health, and it is a noticeable fact that they will not move about as much as is good for them, in gloomy weather. The perches are to be set at a different place each night to avoid an accumulation of droppings on the floor. The floor is to be kept covered at all times with chaff, or some such litter, which will readily absorb the moisture from the droppings, and the fowls are to be encouraged to scratch this about, by grain scattered through it. Managed in this way, there will be no necessity for cleaning up the house every day, or even every week, as the floor is always dry, and the litter can be used a long time before it becomes so foul as to necessitate its removal. The safe rule is to clean up and supply fresh litter whenever a bad odor is noticed on opening the house, in the morning; that is all

the trouble one need take, in the matter. Of course, in damp weather the litter will have to be changed frequently, while in dry warm weather it may not require attention for many weeks; hence no definite time can be set apart for this work.

A ten-foot 2x4 scantling, ripped through its center, makes four perches for this house. These will be two inches square, and the corners should be planed or whittled off, to permit the fowls to grasp the perch, without discomfort. A more thorough consideration of the subject of perches will be given in a special chapter, later on.

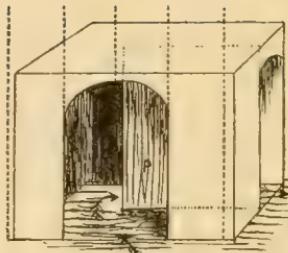
Instead of building the nests in, as a part of the house, I advise the separate nest-box described in the special chapter on that subject; this is best located at the space designated NB, in Fig. 6. It should be made double, with the entrances at the end which is to be placed toward the outside wall. This is away from the direct light of the windows,—the hen's instinct causes her to seek a secluded place for her nest, and when once accustomed to the arrangement which I have described, there will be no trouble about stolen nests. This makes a dark nest, which is the best preventive of the egg-eating habit; for an innocent hen sometimes learns that habit by seeing the vicious at the nest, and generally an egg accidentally broken by a hen that is innocent of the habit, is considered

a feast, if it is in sight,—and thus the pernicious habit is started; but, if broken in a dark nest, it is not discovered.

I have so far said nothing regarding the entrance for the fowls. Of course the ordinary entrance, a hole in the wall with some sort of an arrangement for closing it at night, will meet the wants of most poultry keepers but, for the benefit of any who may wish to use it, I will explain an inexpensive plan by which to shut out the cold wind of winter, as much as possible, while permitting the fowls to pass in and out at will. Referring to Fig. 6, B is a box which may be eighteen inches square, more or less, according to the size of the fowls kept, and should be a foot or more in height. Two of these boxes are shown in Fig. 6, one for each side of the house, and the description and references are the same, but as they adjoin the partition they are made to open right and left into the house. The openings in each box for the fowls to pass through, are marked E E, while P is a partition which shuts off the direct course between the two openings. In Fig. 7 this is more clearly illustrated. The partition is seen at P, and the arrows indicate the course of the fowl, in entering. That side of the box next to the outside wall is removed, since it would be useless and inconvenient to match an opening in the box with an opening in the wall. The five vertical dash lines indicate the boards

Fig. 7.

○ ○ ○ ○ ○



STORM-PROOF  
::: ENTRANCE.

of the outside wall, with the opening. The opening for the use of the fowls is usually about a foot wide, as here represented, and a foot or more in height, according to the size of the fowls which are to use it; Leghorns and other fowls having large combs liable to injury, should be given ample room to pass through.

It might be well to protect the fowls against the drip from the slanting front, at the entrance. This can be done in a variety of ways. Perhaps the handiest method is to fasten a strip, on the slanting front immediately above the entrance, in the same manner as in constructing a gutter for the roof, (see p. 13.) But if one end of the strip is placed a trifle lower than the other, the water will be turned off, and there will be no necessity for the complete gutter; the vertical strip used need only be about two feet long. A joint of old stove-pipe, split in half and tacked on at one edge, would furnish the necessary protection for both openings.

Having passed through this box entrance, the fowl is in the lower part of the house. To reach the floor, the fowl immediately climbs toward the light, first hopping upon the box through which it entered, then to the floor. The opening in the floor above the box-entrance is of the same size as the box; this opening is itself boxed up to a height of eighteen inches and a trap-door, falling to an angle of forty-five degrees and secured there by a drop-bolt, closes the fowls in safely at night. The outer entrance-hole is also closed by a drop-door, so that, if desirable, the fowls can be let into the lower part of the house but not permitted to go outside, in stormy weather. Both of these methods for closing up entrances, will be found explained in detail, in a special chapter, later on. Of course an arrangement of the vertical drop could be made to close the inside entrance of the box and the floor opening at the same time; but I do not consider this desirable, for several reasons. For example, by having the floor-opening with a slanting top to the boxing around it, the light from the windows will penetrate well under the house, which would not be the case if the boxing were vertical and open only at the front.

In summertime, when the front base is raised permanently, (see Fig. 3,) to keep the house cool, the box-entrance should not be removed; it will still be needed by the fowls in reaching their roosting-places.

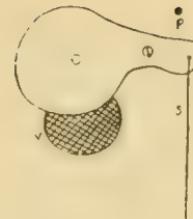


Fig. 8:—

UPPER VENTILATOR.

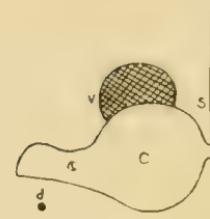


Fig. 9:—

LOWER VENTILATOR.

The two holes under the floor at the back of the house, two at the highest point in the side walls, and the small open spaces along the floor at the partition constitute the system of ventilation, along with the box-entrance, in winter, and the open front, in summer. In Figs. 8 and 9, *v* is the wire-covered opening, *c* is the board or tin cover, working on a round-head screw, and *s* is the cord which operates it. To open the upper ventilators, the cords are pulled down,—when released the cover falls over the opening, where it is held by the nail, *p*; to open the lower ventilators, the cord (which passes up through the floor,) is released,—to close, the cords are pulled until nail, *d*, stops the cover. Each of the cords should have a loop to slip over a nail; it will be necessary to regulate the tension of the cords to hold the upper ventilators open and the lower ventilators closed.

When the front base is up and all the ventilators open there will be a noticeable draft up through the small holes in the floor at the partition; and the warmer the weather, the stronger this action will be, of course, since the heat rises naturally to the highest part of any house and this movement is accelerated in house No. 2, by the location of the upper ventilators at the points where they will most readily carry off the heat. With a tube ventilator, starting near the floor, cooling the house is out of the question. The principal idea, in a tube ventilator, is to remove the foul gases which, being heavier than the air, settle at floor. But, like the contagious diseases which they engender, these gases are better prevented than cured, and the high, dry floor, with dry and dusty air beneath it, is an effectual preventive, along with the sanitary precautions which I advised on page 17.—q.v. In wintertime, it will doubtless be best for the health of the fowls to keep the lower ventilators closed and have the upper holes half covered, at least; for, no matter how carefully built, a house that is not plastered permits some air to enter below and escape above. With a fair amount of judgement in such matters as these, there is no good reason why house No. 2 cannot be kept comfortable and healthful, at all seasons of the year, and in almost any climate in which fowls can be profitably kept.

I have made frequent mention of dust under the house. This is a very important item and should be fully provided for. The spot upon which the house is built should be higher than the level of the ground around it; or a load or two of earth should be filled in to make it so, if need be. With this precaution in the beginning, there will be little trouble to keep it dry afterwards; and, if thoroughly spaded up and pulverized at first, and given an occasional stirring up, the earth under the house will quickly be reduced to what is wanted. In addition to always supplying the dust-bath, which is indispensable in keeping the fowls in good health and free of vermin, the dust aids in keeping the air dry in the house, thus avoiding, so far as can be, the unhealthy vapors which are created in a damp house. In winter, the only moisture that can get under the house is what is carried in by the fowls through the round-about box entrance; in summer the open front renders it an easier matter for the fowls to destroy the dust; but when the front is raised, there is practically over a foot added to the width of the space under the house, because the base then acts as a roof. Hence the dust is well protected from even the stormiest weather.

Another advantage of this dry, open space under the house is in the care of young chicks, in summer; it affords a very ready refuge, in the event of a sudden

storm, and the ventilating arrangements make it a cool shelter from the hot sun.

Of course, in early springtime, or in chilly weather, the young chicks will be confined to the board floor of the house, and such arrangements made for their accommodation there as best meet the fancy of the person having charge of them. I should advise placing a board at least six inches wide along the partition at the floor; there is always some draft there, and very young chicks are easily injured. Free from dampness well ventilated and affording ample provision for admitting light and sunshine, I see no reason why early

chicks could not be reared in this house with entire success, by the natural method. I do not favor artificial hatching and rearing, for thoroughbred poultry, and those who engage in the market-poultry business will adopt a differently arranged house.

Instead of the matched-stuff which I have recommended for the sides of the house, some may wish to use "drop-siding." I have not recommended that material because it requires a frame, which adds materially to the cost of the building, while the result has no particular advantage, for our purpose, over the construction I have described.



## ... ON THE FENCE ...

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**C**HOICE of three kinds of fencing material is generally available, where an inexpensive fence is desired; and, unless the fence is expected to turn large stock, any of these—lath, wire-netting or picket-and-wire,—will answer fully as well as a stronger or more elaborate construction. Of the three, wire-netting is, perhaps, the most popular. It is to be recommended on several counts, being very durable, handily put up and obtainable at a very reasonable figure, in most of the large cities; it is sold at one cent or less per square foot, in some places.

There are certain principles which apply in the construction of all fences, no matter which of the three kinds of material is selected. Stability is the great problem, always. This is to be secured, primarily, by anchoring the posts deep in the ground. The depth to which they should be sunk will vary according to circumstances. If in hard clay they would not have to be set as deep as in soft sandy soil; and a post that is driven is more stable, for a given depth, than one set in a hole dug for it, because the earth can seldom

be tamped in around the post as firmly as it originally was, while a driven post has compacted the earth more firmly than its normal condition.

Again, a wire fence will not offer as much resistance to a strong wind as a picket or lath fence, and consequently will not require as much firmness in the posts. Lath or pickets close together will, for the same reason, require the posts to be more firmly set than if wide spaces are left between the pickets. The picket-and-wire fencing will require stronger and firmer posts than any of the other materials named; in fact where it is used without a base board it is almost certain to pull the posts down, sooner or later. Posts for it should be 4x4 inches, set at least two feet into the ground. Lath or wire-netting is more to be recommended for a poultry-yard or garden fence, however. Properly constructed, either is strong and durable enough for the purpose, and certainly they present a better appearance and the lath fence can be made more ornamental, by a small amount of extra work in trimming the top ends.

A very convenient tool for tamping the earth solid around a post is made of a piece of hard wood about five feet in length, with the upper end trimmed for a handle, the lower end to be about four inches wide and not over an inch-and-a-half thick. This will pack the earth better than a round stick; but whatever is used for this purpose should have a flat side to strike close to the post. The dirt should be filled in and tamped at the same time, because it cannot be packed firmly at the bottom, if the hole is filled full of loose dirt at first, and a post so set could easily be pulled over.

A fence that separates two yards in which fowls are kept, should always have a solid base about two feet up from the ground; this is to prevent fighting through the fence, a pastime common to all breeds of domestic poultry and by no means confined to the sterner sex. But a solid base is advisable for all poultry and garden fences, for other reasons than the one just noted. It prevents the straying of small chicks into possible harm for themselves or mischief to adjacent grounds. It gives strength and stability to the fence. And it is less convenient for the entrance of rats and other harmful small animals. For a wire-netting fence the base is usually made of broad boards, placed horizontally from post to post; and as it will not often happen that single boards two feet wide can be obtained, the hint, which I gave in the last chapter, in regard to

"breaking the joints," had best be applied in putting several boards together for the base of the fence. The same rule should also apply in nailing on the single board used for the upper rail of the fence, (for these light fences, inch-thick boards take the place of scantlings used in the ordinary fence, answer every purpose and are not so expensive,) the ends of these upper boards should not meet on a post directly over a similar joint in the base; these joints should be at alternate posts; this is particularly true if the base is made of only one board. I suppose I need scarcely mention that this is done to keep the fence from danger of breaking or racking at the posts in a strong wind. The broad base for a lath fence can be made more cheaply, and at the same time more ornamental, by using two strips of inch-stuff eighteen inches apart, upon which half-length lath are nailed, alternating with the full-length, thus making the lower half of the fence solid. However, no harm would result from leaving a half-inch space at each side of the short lath, and less material would then be required to build the fence. The tops of both the long and short lath should be trimmed to a point; this can, after a little practice, be readily done at one stroke, with a sharp hatchet, or one stroke for each side where the point is to be at the center of the lath. When so trimmed this makes a very ornamental fence, and chickens or birds

will not attempt to alight upon it. Few chickens are bold enough in flight to go over a fence; they generally fly to the top and thence start again.

The lower base board should extend across the gate-opening, from post to post, to give greater strength to the fence, as will be explained in the special chapter on gates.

The height of the fence may vary according to the breed of fowls kept or the kind of material used in its construction. Wire-netting two feet six inches wide, with a solid-base two feet wide, will make a fence of sufficient height for the American and Asiatic breeds and for bantams; and such a fence, with no strip along the top to tempt the fowls to fly up, will generally confine any of the other breeds. And I should here remark that if poultry is to be profitably or satisfactorily kept anywhere,—whether it be on a farm, in a fancier's yards or merely about the premises for family use,—proper provision should be made for keeping it within certain bounds; the keeper of thoroughbred stock fully appreciates this fact, but poultry, as ordinarily allowed to forage about the farm or back-yard, (usually unfed,) becomes a nuisance "from the very nature of things." This is particularly the case where the fowls are taught to look for scraps at the kitchen door and scattered grain where the horses and hogs are fed. The poultry should be fenced away from such places, if given free

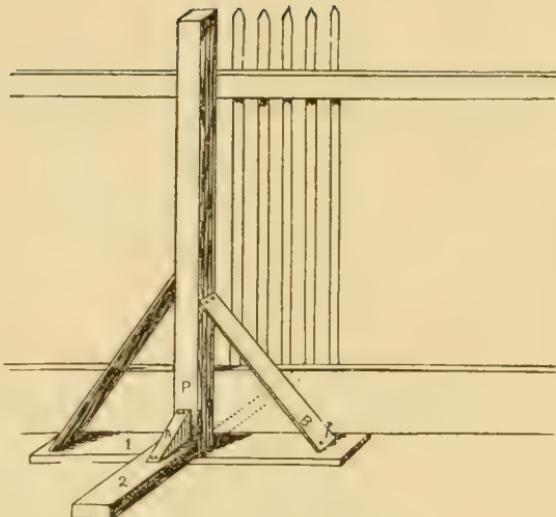


Fig. 10:— SELF-SUPPORTING POST.

range, and I certainly believe the trouble of opening a gate in such a fending fence does not counterbalance the vexation and waste occasioned by "having the chickens always in the way."

The height of the ornamental lath fence, which I described on a previous page, would be over four feet,

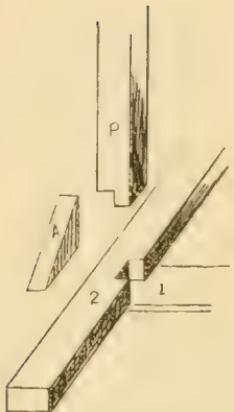


Fig. 11.

and as the base of it will entirely shut off the fowl's view beyond and there is no alighting-place on top, there is little danger of an attempt to fly over.

But a movable fence is often desirable, and in such cases some plan for a post that will remain firm on the ground must be adopted. The idea shown on the preceding page is probably the best of its kind. The post, for a lath or wire fence, need not be heavier than 2x4 scantling. It is set into a 2x4 base piece, (2 in Figs. 10 and 11,) by a half-mortise, as explained

in Fig. 11. The board, (1,) about six inches wide, is then nailed on at the bottom. The post is then placed in an upright position and the braces, B, put on. The block, A, (which is sawn from a 2x4 scrap,) is also nailed on. At this stage, the post is to be placed in position and the base boards of the fence nailed upon it, after which a block like A is to be braced against the base, instead of against the post on that side; this is better than to cut the base to fit over the block. Nails are driven through the base of the fence into brace B. The pieces 1 and 2 need not extend out more than two feet each direction, as a wind which would overturn a fence so constructed would break down any fence, and providing against extraordinary circumstances is out of the question. The braces and blocks are fastened on by driving the nails diagonally, as shown at B in Fig. 10; this is, oddly enough, called "toeing" or "toe-nailing."

The base boards, being fastened to the braces, add firmness to the post; block A is not in the way, brace B would be in the way, on that side of the post; at first glance, it would seem that brace B is more needed on that side of the post, but the construction of the half-mortise is such as to make it scarcely possible to move the post "out of plumb" in that direction, with no brace against it; the mortise is not so rigid in the other direction, however.

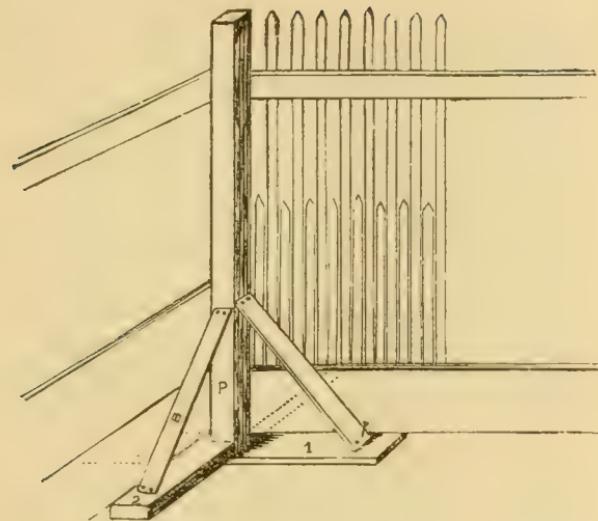


Fig. 12.

The same principles would apply in constructing a corner post, and the only modification of the post in Fig. 11 would be to place one of the braces on 2, instead of 1; the blocks will then be on the outside of the corner and the braces inside,— see Fig. 12.

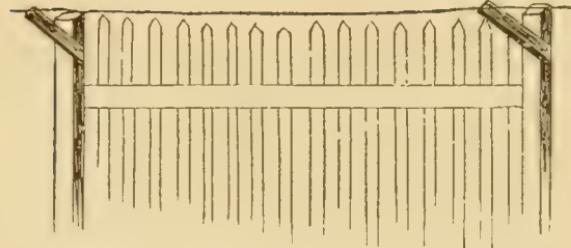


Fig. 13.

Ordinary 2x4 scantling make very good posts for lath or wire-netting fences; a ten-foot length would make two self-supporting posts, but if to be driven into the ground they would have to be longer. Scantlings can be readily driven, thus avoiding the trouble of digging the holes needed for larger posts.

Of course, the higher the fence the greater its cost both actually and proportionately, because more and stronger materials are required. This leads us to devise means to prevent flying over a fence. As before stated, a fence between four and five feet high will confine the larger breeds of fowls; and, if there is no opportunity given them to alight on the top of the fence, there will seldom be any trouble with any of the breeds, nor with Turkeys or Guineas. But there is

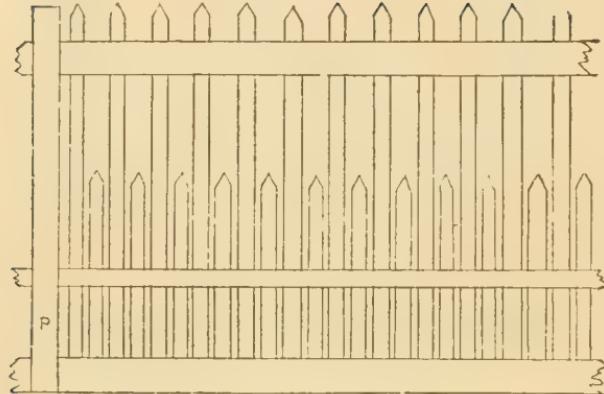


Fig. 14.

occasionally an inveterate flyer that must be circumvented. This is generally accomplished by clipping the flight feathers of one wing. The lady who was so vexed at a hen that she clipped both wings and the tail, "and the old thing would fly over the fence anyhow," was mistaken in her philosophy, of course; the idea in clipping one wing (and one only,) is to prevent a balanced flight, thus causing the fowl to involuntarily fall short of its aim, and it will give up, in disgust, after a few attempts. Clipping the flight feathers

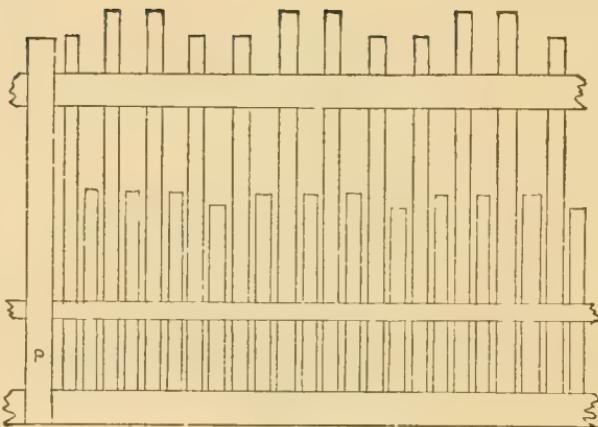


Fig. 15.

square off sometimes causes such injury to the wing that the new feathers which grow in afterwards show defects in color or structure, and the fancier cannot afford to take any risks, in this particular, with valuable fowls. Therefore, if a wing is to be clipped, he will trim off only the webbed portion of each feather, leaving the shaft untouched. This causes no injury, and the feather will remain its natural length of life, instead of dropping prematurely, as is usual where the shaft is injured.

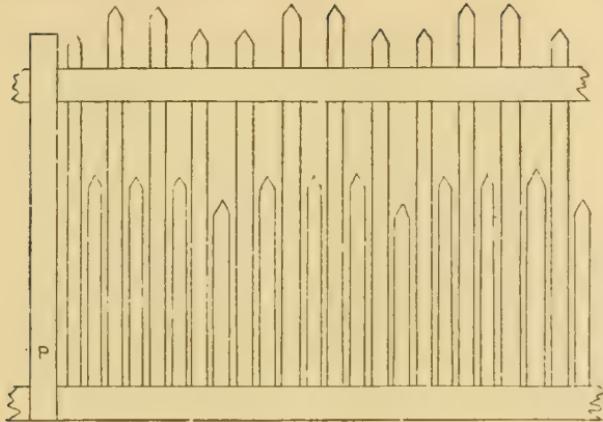


Fig. 16.

But such a remedy is only temporary, at best; the wiser plan is to stretch a wire along the top of the fence, as shown in Fig. 13. It is best located about ten inches inside of and almost on a level with the top of the fence; the idea is to so place it that the fowl's wings will strike it, in an attempt to fly up. A small wire will mystify most fowls, but almost any kind of wire will answer the purpose.

Figs. 14, 15, 16, 17, 18, 19, 20 and 21 suggest different methods of ornamental trimming of lath fences; in

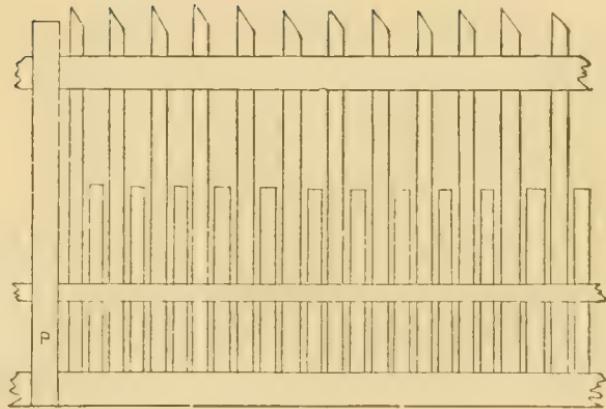


Fig. 17.

some of these sketches, the laths do not extend as far above the top rail as they should, (and as a four-foot length would allow,) but the idea is explained and no attempt is made to picture the fence itself. One post (P) is represented in each sketch. The lower and upper rails, in this style of fence should be inch-thick boards about six inches wide; the middle rail, in the styles requiring it, may be a mere strip.

Generally speaking, it is not in good taste to combine two methods of trimming pickets. For instance

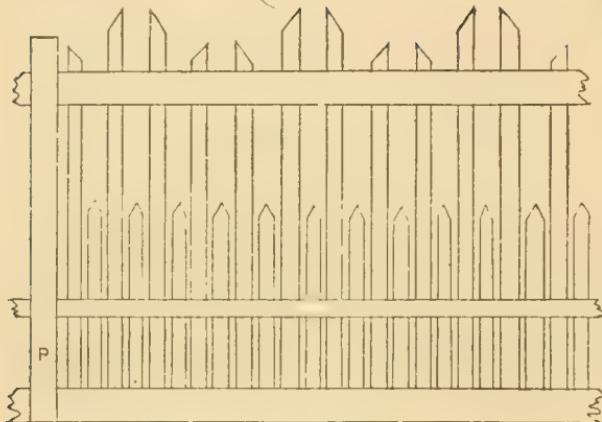


Fig. 18.

the pickets shown in Fig. 20 would not look well in combination with those of Fig. 21. An important exception to this rule, however, is shown in Figs. 17, 18, 19; side-pointed short pickets might endanger the life of some fowl, (a young Turkey, for instance,) foolish enough to attempt to go through the broader space above and thereby hanging itself. With the square end or center-pointed picket there is no risk.

As a rule one small nail at each place will answer every purpose and is really better than two because

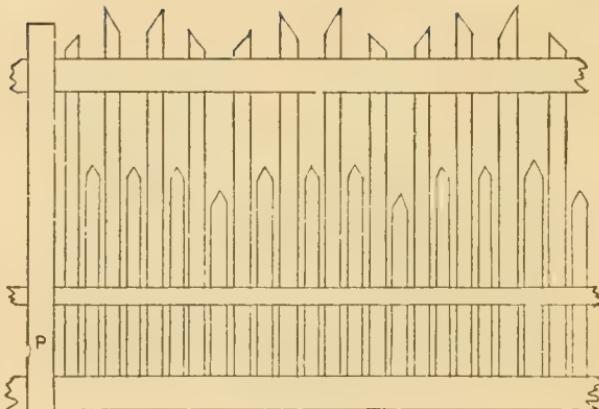


Fig. 19.

the lath breaks easier where two nail-holes are made in it.

A plan which is sometimes used for Bantams and where pigeons or other birds are troublesome, is to cover the whole top of the run with wire-netting. A fence of the ordinary height would be a useless expense, in connection with this. Probably the best plan would be to lay out the runs in long and narrow form, making the side fences only about two feet high and the end fences of the ordinary height. The net-

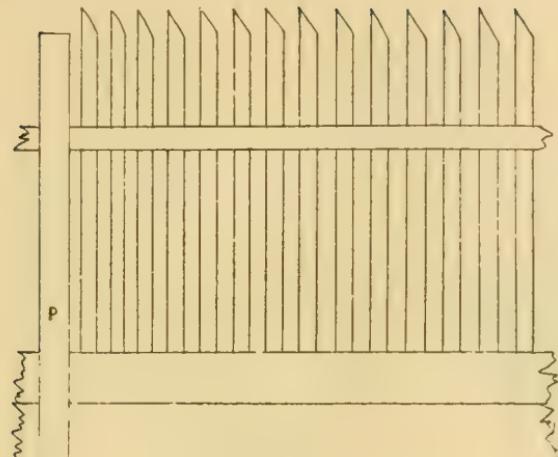


Fig. 20.

ting used for the cover to be in two sections, meeting along the center of the runway and so arranged that they can be raised up to a perpendicular along the line of each side fence, when it is necessary that the attendant should enter the runway.

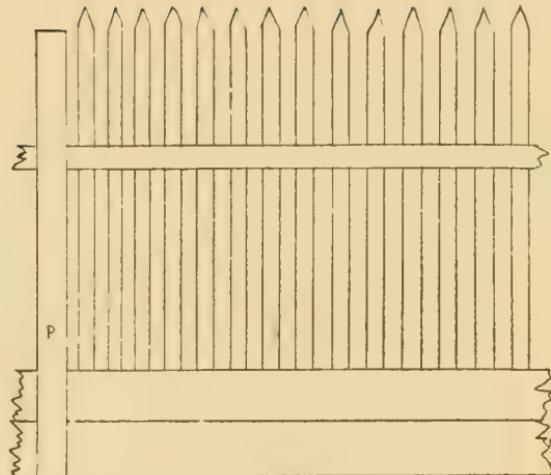
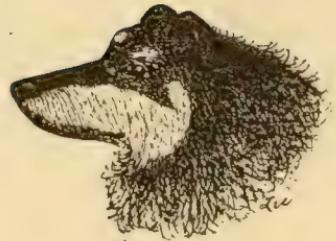


Fig. 21.

The long and narrow form is best for all yards, for many reasons, where the fowls are kept confined; the principal reason is that the same area will afford more range for exercise, if long than if nearer square in form.



## ON THE GATE.



**D**EALING, as we are, with exactly the same kinds of materials, in the construction of gates, as in the construction of fences much of what was treated upon in the chapter on fences applies here and need not be repeated. I suppose it is scarcely necessary to remark that for the sake of appearances it is wisest to use the same material in the gate as is used in the fence; or, in other words, a gate made of wire-netting would not look well placed in a lath fence, or vice versa.

As before stated, I think it best to continue the base-board of the fence across the opening made for the gate, as this will add firmness to the posts. This base-board is a famous perching-place for the chickens, when the gate is standing open, and for that reason it is advisable, where the heavier breeds are kept, to nail a strip on the base-board to make the top edge wide enough to avoid an injury to the breast-bone. I had a practical lesson on this subject once, and several nice young Brahmans went to pot.

Another advantage in having the base-board across the opening is that it affords a support to prevent the

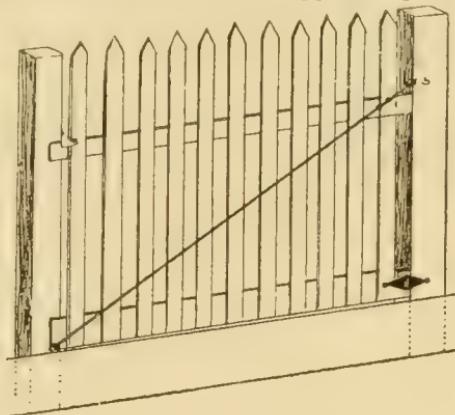


Fig. 22.

sagging which occurs in a greater or less degree in all gates of the ordinary construction.

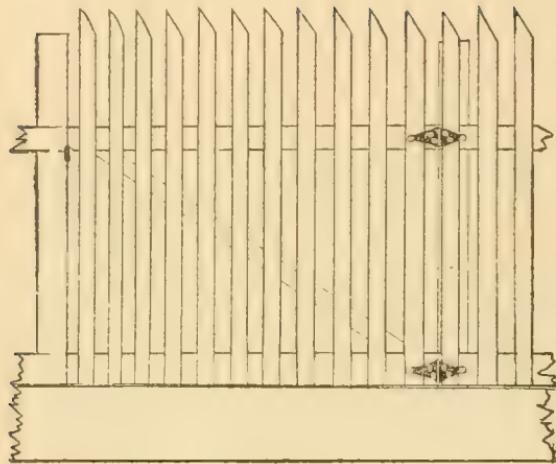


Fig. 23.

How to prevent sagging is perhaps the most important question to be considered, in connection with the gate. The plan most commonly employed is that illustrated in Figs. 23 and 24. The brace may be doubled, as shown in Figs. 25 and 26, which, of course, adds to the rigidity. Another plan is to suspend the gate by a wire, as shown in Fig. 22. This wire serves for a hinge

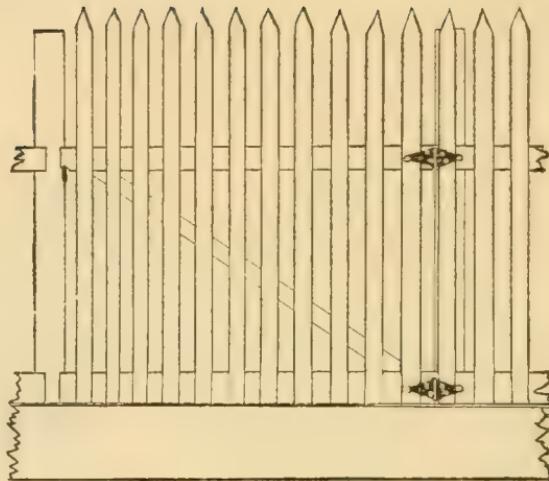


Fig. 24.

as shown in the sketch, which calls for no further explanation, I believe.

For a lath gate no frame is needed. The laths are to be merely nailed upon boards in the same manner as in building the fence itself. Then, if properly braced, such a gate, with reasonable care, will be as durable as the fence itself.

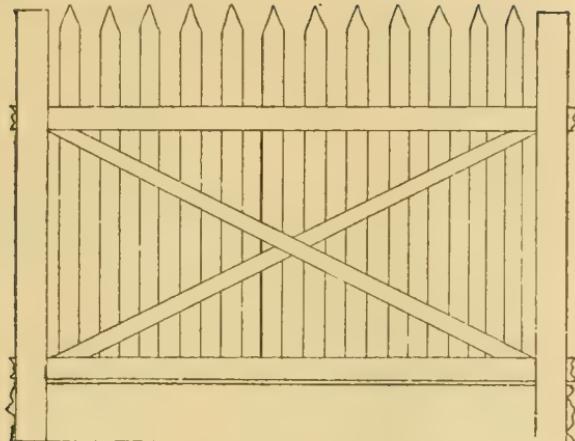


Fig. 25.

The brace, as well as the two battens, should be inch strips. The brace, being bevelled at the ends, is to be toe-nailed to the battens, and the laths are to be nailed to the brace as well as to the battens. Made in this way such a gate is very firm, considering the materials.

Figs. 22, 23, 24, 25 and 26 show various styles of lath gates, under the method of construction which I have recommended.

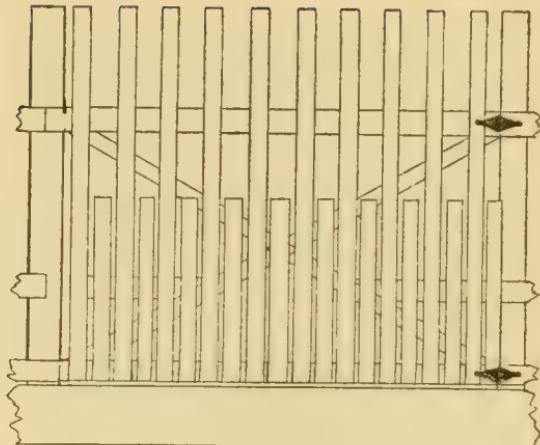


Fig. 26.

In constructing a gate with wire-netting, a frame must be made, and it is well to brace this in both directions, as shown in Fig. 27. In making this frame there is no necessity for mortising at the corners; the use of long wire nails will make it strong enough for the purpose, where two braces are employed as shown in the drawing. The upper and lower pieces of the frame should be a trifle longer than is needed for the

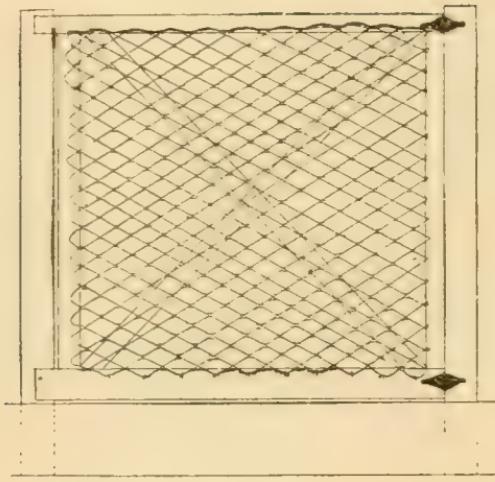


Fig. 27.

frame, to allow for the fastening, the nails being driven through these pieces into the ends of the uprights. Some hints on the subject of fastenings will be given later, in a special chapter.

As a rule, a gate is handiest if it is hung so as to be pulled open with the right hand or pushed open with

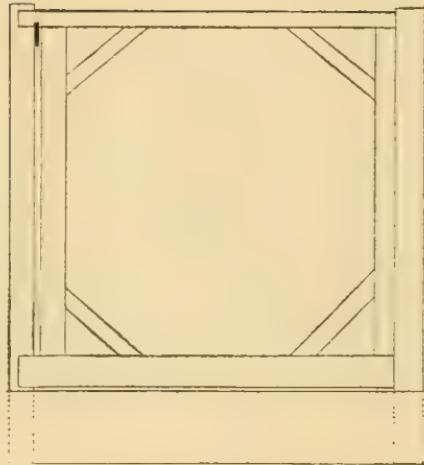


Fig. 28:—Another Method of Bracing the Frame.

the left. But circumstances often make it necessary to reverse this. For instance, it is better to hang the gate to swing against a wall than to swing away from it, because the passage opened is more free and the fastening is more conveniently reached. On general principles, the hinge at the wall is firmest, anyway.

## ABOUT DOORS.



**E**VERY-DAY DOORS are made of common tongue-and-grooved stuff, applied vertically and held together by "battens." These are generally an inch thick and about six inches wide, very securely nailed at about twelve inches from the bottom of the door and eighteen inches from the top. Sometimes a diagonal brace is inserted, in the same manner as in a gate, but for ordinary use the battens make the door strong and firm enough, if well nailed on. Figs. 29 and 30, (next page,) explain this style of door and the method of constructing it, with and without a diagonal brace.

The ordinary size for a door of this kind is about three feet wide and six feet or more high. What was said in the last chapter as to hanging a gate will apply to a door as well. If the door is located near one corner of the house, as in Design No. 2, then it should open outward away from the corner or inward against the north wall. The reasons for this are,— first, if the door were hung to swing out past the corner it would be liable to injury if opened violently by the wind or

through carelessness; but if a fence were attached to that corner, either at a right-angle to the door or in line with it, then there might be no serious objection to having the door swing northward, and probably that would be most convenient where the fence joined at a right-angle: secondly, if the door were made to swing in toward the center of the room it would, of course, be in the way for several reasons

An extra board should be nailed so as to cover the crack at each side of the door. In Figs. 29, 30 and 31 the extra boards are numbered 1 and the wall boards 2; the dash lines on boards 1 represent the edges of the door, in Figs. 29 and 30. These extra boards serve a good purpose, also, in making the hinges and fastenings more secure than they would be on only one thickness of board.

Fig. 31. In applying these extra boards notches may be cut to fit the battens of the door, (Fig. 29,) or the ends of the battens can be trimmed off to make this unnecessary, (Fig. 30.)



"SOME OF LEE'S IDEAS."

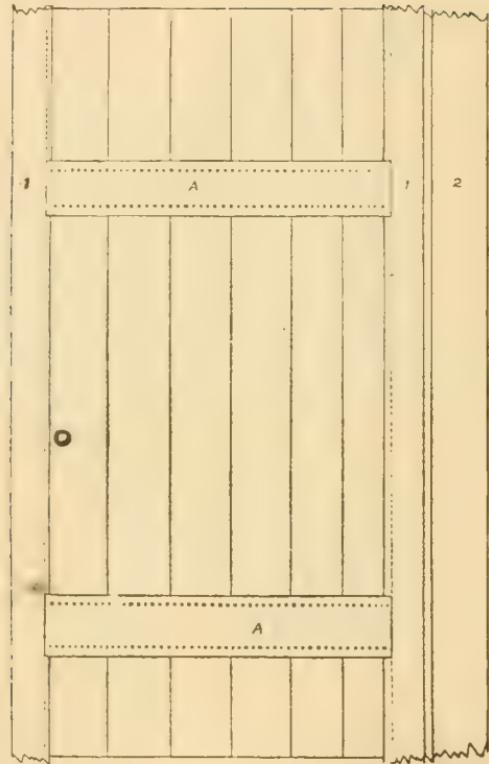


Fig.  
29.

.....ABOUT DOORS.

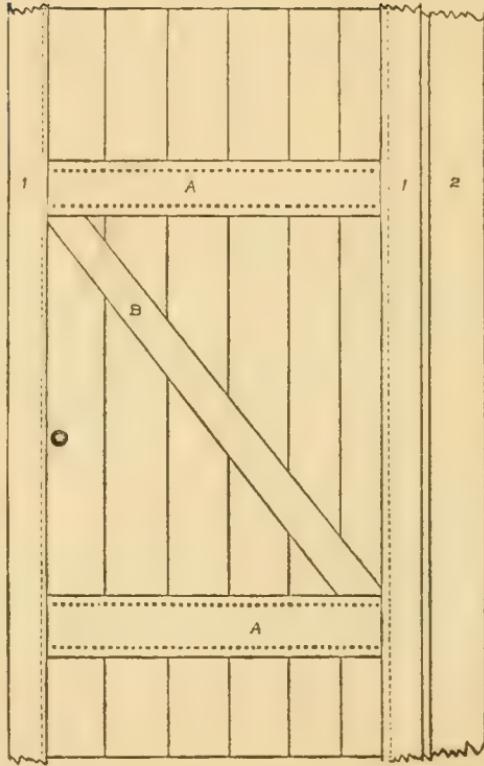


Fig.  
30.

"SOME OF LEE'S IDEAS."

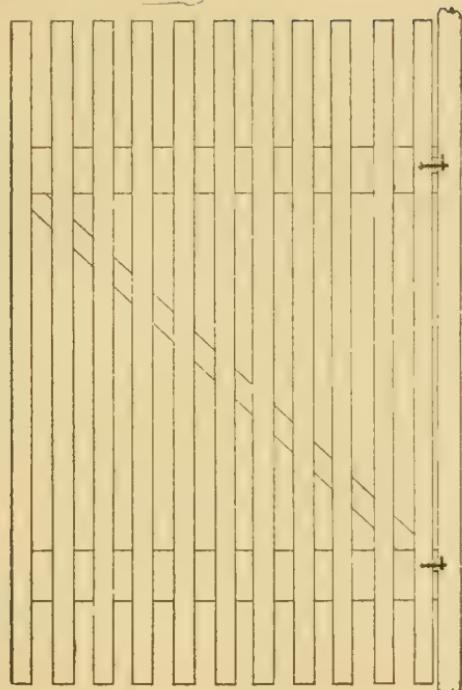


Fig. 31.

Doors for partitions are made like gates.—Figs. 31 and 32,—either of long strips, (31.) or of lath, (32.)

.....ABOUT DOORS.

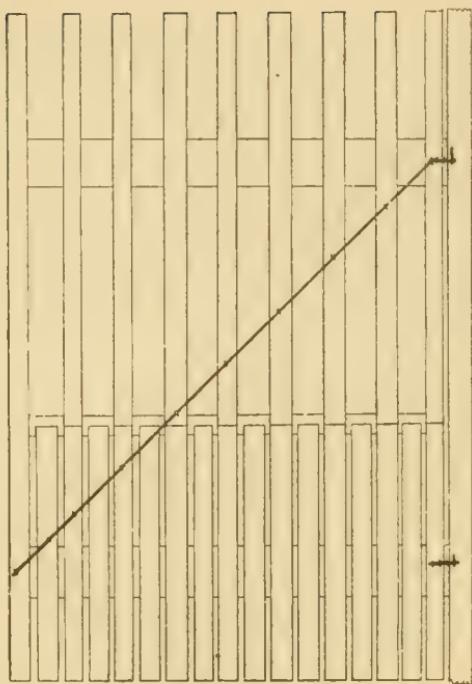


Fig. 32.

It would be wise, also, to use such a door to close the main entrance, during warm weather. In winter, when

not needed, it can remain swung back against the wall out of the way, or it can be removed entirely. The wire hinge described in the next chapter is very handy where the door is to be removed, and it will support these light doors as well as gates.

Such doors may be braced in the ordinary way, Fig. 31, or by a wire like the gate shown in Fig. 22. This method is shown in Fig. 32, which is, to my mind, a very attractive design, in several ways. Full-length lath, above the nearly solid base which is made of half-lengths, brings the height up to six feet. A narrow strip, or a lath, will answer for the cross-piece to join the laths upon. In applying the suspending-wire

the upper end should be shaped for the hinge and then the lower end filed to a point and bent to a right-angle. The door is then to be adjusted squarely and this pointed end driven in to hold it so. A staple, such as used for putting up wire netting, or a hand-made staple of about the same size, should then be driven down over the wire near where it enters the wood, and the wire may also be secured with staples at each lath. If the points go through the lath they can be clinched into the wood by holding an axe, or any weighty piece of iron, against the lath where the points will emerge. This is better, and much neater, than to attempt to clinch the points after they are driven through.

## ABOUT HINGES.



**F**OR HANGING a door or a gate the ordinary strap or half-strap hinge can be used, but if a number of hinges are needed it may be wise to adopt something more economical.

In applying a hinge care should be taken to adjust it to move freely; if "on a strain" caused by crooked ad-

the broad end is fastened to the gate or door. A hinge is always fastened to the gate or door first; then, after adjusting the gate or door to its opening, the hinge is permanently fixed to the support.

With the idea of a serviceable hinge which would be cheap and easily made by hand, I have designed a

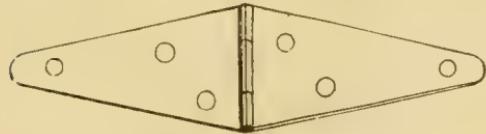


Fig. 33.—STRAP HINGE.



Fig. 35.

justment, the hinge will in time become loose or otherwise occasion trouble. In applying a half-strap hinge

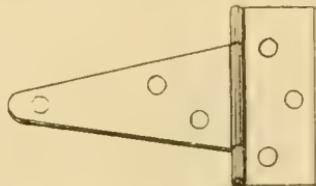


Fig. 34.—HALF-STRAP HINGE.



Fig. 36.

hinge to be made from any heavy wire; two pieces of old telegraph or telephone wire, each about three and

one-half inches in length, bent as shown in Figs. 35 and 36, will make a hinge that will answer as well for the light gates and doors recommended, as something more expensive, and will wear at least as long as such a gate remains in usable condition. Long wire nails can be used, but I have recommended old telegraph wire because it can be picked up almost anywhere and saved until needed. Fig. 37 shows the hinge complete.

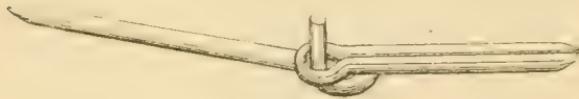


Fig. 37.

These wires are so shaped that they can be driven like nails, (a great point in favor of such a hinge,) and will not suffer alteration in being driven, if they are shaped properly, in the beginning,—and this is an important item. In the part, (Fig. 35,) intended to be driven into the post, the vertical end, 1, is at a right-angle with the loop, 2, and this loop is one-sided; if this loop were symmetrical, like the loop in Fig. 36, the force exerted in driving it, would enlarge and otherwise distort the loop. Fig. 38 shows a hinge in use,—P the post, G the gate.

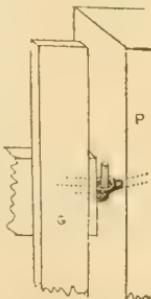


Fig. 38.

When the part of the hinge is driven into the post until there is just room for the gate-loop to slip into place, a nail should be driven into the post close up under the loop; this gives greater firmness to the hinge, for constant use. Likewise when the loop is driven to its place in the gate, (which is just enough to permit it to slip over the spike, 1, Fig. 35,) a nail should be driven into the gate above the loop; this nail should not be driven quite home, stopping when the head is at about the point marked 1 in Fig. 36, so as to fill up the angle in the loop. These nails, it will be noticed, strengthen the parts in the direction towards which the weight of the gate is pushing them, —downward in the post, upward in the gate.

In driving the parts of this hinge it will generally be found advisable to slant them laterally enough to place the loops at the corner; this will allow the gate to open wide. To permit the hinge to work freely, both loops should be exactly horizontal, one resting flat upon the other; if they are not just right, after driving, they should be treated with hammer or nippers. Likewise, if the weight of the gate does not rest equally on both hinges, a hammer should be used to adjust them.

Properly made and adjusted, such a hinge will last a reasonable length of time and, everything considered, prove as satisfactory as could be wished. Not

the least item in its favor is the fact that the gate can be lifted off at will.

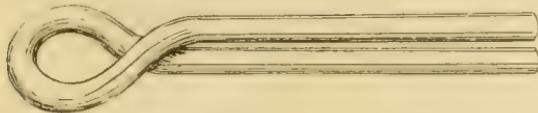


Fig. 39.

A quarter twist in loop 36 will adapt the hinge to use as a door-hinge, making the flat of the loop

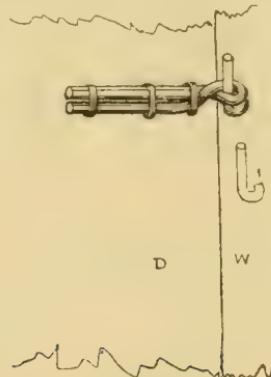


Fig. 40.

a right angle with the ends of the wire which were to be driven,—Fig. 39. If these ends are to be fastened

flat on the side of the door, by the use of staples, Fig. 40, the points need not be sharpened; but a better hinge for this purpose, (and one that is as well adapted for a gate,) is made by the modifications shown in Fig. 41. In this, after the quarter-twist has been made, the ends are spread to a Y, and then about an inch at the point is turned down and sharpened for driving into the wood, at 2, 2. The part should then be secured by a long staple near the edge of the door; and if this staple can be clinched, it will be more secure.

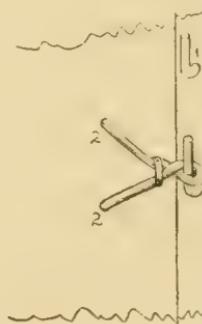


Fig. 41.

The other part of the hinge is merely to be driven directly through the wall, as near to the edge as is safe, and the point clinched back into the wood.

## GATE AND DOOR FASTENINGS.



**G**ATE FASTENINGS which can be depended upon are among the most important items to be dealt with, whether it be about the farm, the garden or the fancier's yards. On this subject I cannot do better than to quote from what I wrote for the Poultry Monthly some time ago, giving a description of the fastening which I recommend for all gates not exposed to rogues of the quadruped or biped order.

"Where there are a number of yards each requiring a gate, the question of a suitable fastening is sometimes an expensive one, and it is a vexatious one as well, if the fastening fails to do its work well. Many a charge of fraud can be traced to an insecure gate or door fastening, which permitted the mixing of the fowls in two yards for a short time. I once bought some Light Brahma eggs, which were to be selected for me from two hens; when they were hatched, it became evident the babies were mixed, for there was one which looked like a Silver Wyandotte in color, comb, etc., although it had slightly feathered shanks; an-

other chick was a little lighter in color, but had the other Wyandotte characteristics and fairly feathered shanks; a third showed traces of Wyandotte color only. Hence I concluded that the hen which laid those eggs had been guilty of an indiscreet meeting with a Wyandotte neighbor; whether the impurity went further than these three chicks, it was of course impossible to decide. The breeder was astonished at the result of the hatch; no doubt some of the help about the place had separated the birds without reporting to him. Such cases may happen on any poultry farm.

"A fastening that is inexpensive and at the same time reliable is therefore a necessity. The sketch given herewith shows a fastening for a gate that costs next to nothing, and is as secure for either a firm or a sagging gate, as any handy fastening that can be devised, I think. It is self-fastening and always ready to catch the gate. It will be seen to be a modification of the common iron drop-hook fastening, but it has the advantage of that fastening in

that it will permit much more sagging of the gate before it needs resetting. If the gate in time sags considerably, the nail *P* can be drawn and redriven higher

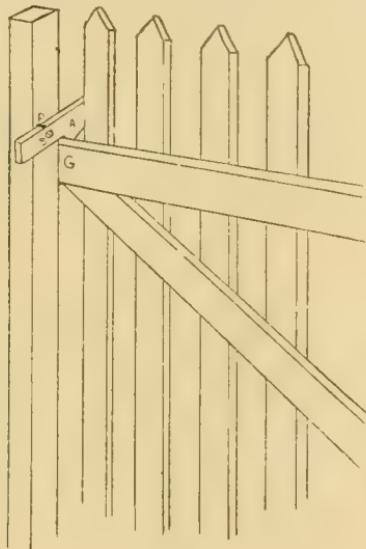


Fig. 42.

up, thus making allowance for almost any sag that may occur in the life of any well-made gate. But the fas-

tening itself can be readily readjusted by removing the screw *S* and driving it lower down to make the fastening level with the gate. The fastening is opened by raising the hook end or depressing the small end. It should be made of hard wood,— beech, elm, sycamore or other scraps about the place can be utilized; a piece of old barrel stave will answer admirably. The enlarged drawing, (Fig. 43,) shows the shape to cut it.

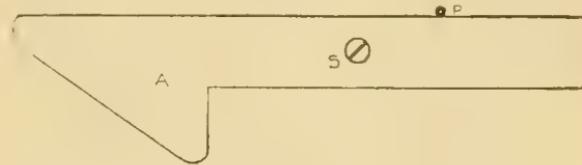


Fig. 43.

A large wire-nail can be used instead of a screw, and will answer every purpose; the hole in the fastening should be larger than the screw or nail used, else the fastening may not drop down to its place freely in wet weather. The small nail *P* keeps the fastening always ready to catch, prevents its swinging down out of place and, if rightly located, the gate in closing will knock the fastening down into place, in case it should remain up when opened."

The size of such a fastening would, of course, depend upon the work expected of it. If for a light gate, the

cross-piece being one inch thick and the post against which it shuts being 2x4, placed flatwise with the fence then a scrap of hard wood a half-inch-thick, two inches wide and about seven inches long will make a suitable fastening. Having shaped it as shown by Fig. 43, it is to be adjusted on the post to allow the hook to catch freely over the gate; this should be done with the gate in position. The small nail or brad, *P*, is then driven into the post to hold the fastening horizontal, and for this purpose it need not project more than one-fourth of an inch. This small nail can be driven above and to the rear of the screw, *S*, as shown in the drawings, or it can be driven under the fastening in front of the screw.

The small nail located as in Fig. 43 will always keep the fastening at the horizontal position, but if it is desired the nail can be placed in such a position that the fastening will stay in a nearly vertical position, when thrown up. By experimenting a little, this small nail can be so located that the gate in closing will knock against the lower end of the fastening, when up, so as to make it catch the gate automatically. I should advise that such a precaution be taken in all cases where the plan shown in Fig. 43 is not followed.

The same idea can be worked out in stiff wire, as I have roughly shown in Fig. 44. A round-head screw, *S*, should be used for attaching it to the post. If the

post is two inches thick, then the fastening will be about five and a half inches long, when completed, and require about ten inches of wire to make it. The ends should be turned back, as shown in the drawing, to avoid injury to clothes or hands in passing.

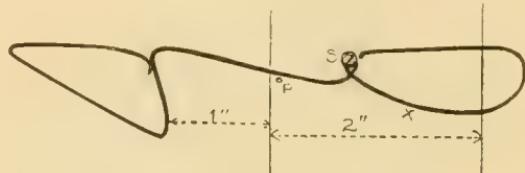


Fig. 44.

The nail for holding this fastening in position may be placed inside of the rear loop, just over the point marked *x* in the drawing, but perhaps it is better placed near the front edge of the post and under the wire,—*P*, in the drawing. The fastening can then be thrown up out of the way when the gate is opened, and the gate, in closing, will touch the rear loop below *x*, thus throwing it into position; the fastening adjusted in this way is thus automatic in any position.



QUOTING AGAIN from the article in the Poultry Monthly:—

"This small nail, *P*, is also an improvement on the old-fashioned button used as a fastening for doors and gates. I have often wondered that the idea has

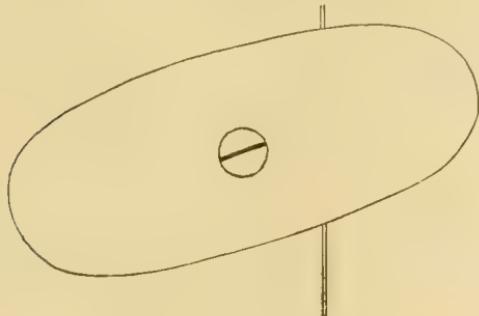


Fig. 45.

not come into universal use with these buttons long ago; but I have never seen it except where I suggested it. Without the nail the button is treacherous; it often turns to the vertical position, particularly if

loose, and to prevent this the common practice is to tighten up the screw with a hammer or screw-driver. But this nail, *P*, once driven would forever obviate the trouble. The buttons as commonly shaped, with screw or nail at the center, Fig. 45, can have the nail applied to hold them in place, but it is better to insert the screw near one end, Fig. 46, for many reasons."

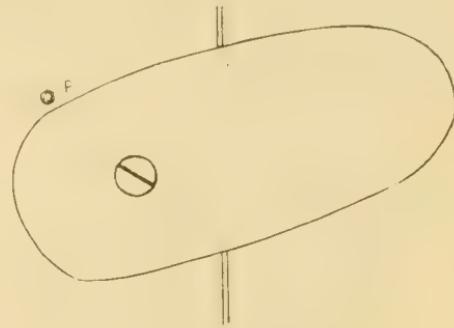


Fig. 46.

The nail *P* should not be placed so far back that the button when thrown back, would interfere with the closing of the door.

Secured in this way such a button will probably be most satisfactory if it is loose enough to fall into its place freely; a round-head screw is best, and if a flat-

head is used the hole should be reamed out with the point of a knife-blade to fit the screw-head.

These buttons are usable from only one side of a door and from only one side of a gate also, unless the gate is so low as to permit reaching over it,—a height which is generally insufficient. Some plan to turn the button from the other side would therefore add to the usefulness of the button, in many cases, for it is frequently applied to doors of stables, corn-cribs, and in fact to most of the many different kinds of out-buildings about any dwelling-place.

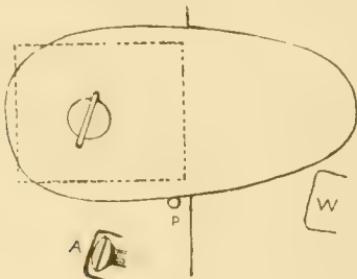


Fig. 47.

The problem is an easy one. The button is to be made as I have just advised and the screw which holds it is to be tight in the button, passing loosely through the wall and screwing firmly into a block on the inside

of the building. When this block is turned the button will, of course, turn with it. The hole in the wall should be larger than the shank of the screw, to allow the fastening to move freely, and the screw should not be driven so far into the block as to bind the button against the wall. To secure the button more firmly to the screw, it would be well to make a wire staple, *w* in Fig. 47, to be driven into the button over the screw-head, after all is in place, the wire to be sunk into the slot in the screw-head,—see detail at *A*.

The nail to keep the button from falling out of position can be applied above the button, as in Fig. 46, or below it, as in Fig. 47.



Fig. 48.

The small metal buttons, of many shapes and sizes, used about the house for the doors of cabinets, book-cases, etc., should also have a brad or tack applied to save the vexation they are continually causing. For these, a piece of a common pin about a half-inch long will answer.

THE so-called secret fastening for doors affords opportunity for the exercise of much ingenuity; at the same time the simplest contrivance for the purpose is probably as good as any, and as free from objections. In Fig. 49, which shows the inner side of the door, A is a strip of half-inch stuff, about twenty-two inches in length; this is adjusted to project an inch or so beyond the front edge of the door, thus passing that much behind the wall, when at rest. In the upper end of this strip a wire-nail, 1, is driven; the head of this nail projects a little beyond the outer surface of the door and is used to operate the fastening. A slot, 1 2, which is too thin for the nail-head to pass through, allows the nail to be pushed upward. Possibly a crack in the door can be enlarged for this purpose, thus adding to the deception. A broad staple, made of strong wire, is fastened very securely as close to the front edge of the door as is safe. A shoulder on the lower edge of the strip, (at 3,) or a small nail driven there, will prevent slipping too far forward, but if the slot terminates at 1 so as to allow the nail to pass no further downward this precaution will not be necessary. Sliding the nail upward in the slot two inches withdraws the slide A more than an inch. If the slide were longer

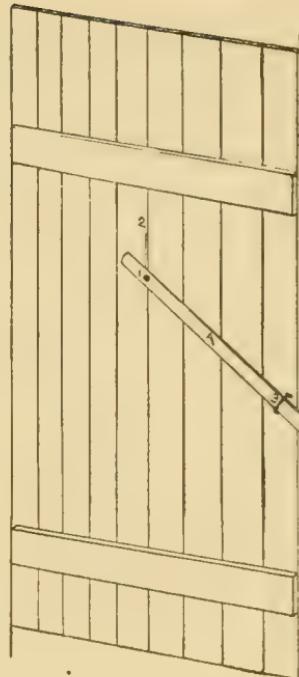
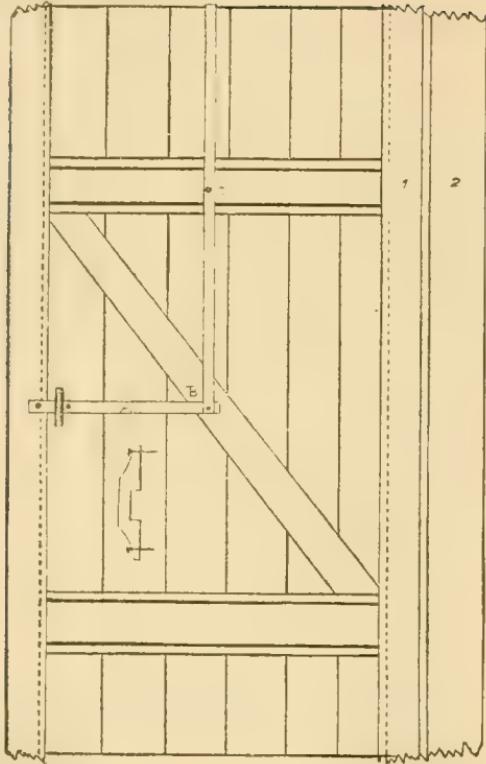


Fig. 49.

than twenty-two inches the nail would have to be

Fig.  
50.

pushed further. The weight of the slide causes it to act automatically, when the door is closed. Of course nothing but the head of the nail is visible on the outer side of the door, and, as this is not where one would expect to look for a fastening, the uninitiated would scarcely suspect its connection with the fastening. A knob or some other means of pulling open the door should be provided.

Another plan, applicable to some doors, is shown in Fig. 50. This consists of a slide A; operated by a lever which extends upward to the top of the door. An elbow joint, B, connects the two parts. The lever is attached to the door at C, by a wire nail on which it works loosely. The front end of the slide is held in place by a wire staple, or by a piece of wood shaped for the purpose, and brads driven into the slide on both sides of the staple prevent the slide moving too far either way. A nail in the upper end of the lever is to be reached from the outside, or what is better, a nail kept convenient is used to operate the lever. Pushing the end of the lever towards the front edge of the door withdraws the slide; to fasten the door the top of the lever must be pushed back. This fastening is in no sense automatic.

## TRAP DOORS, ETC.

\*\*\*

**H**OLES to allow the fowls to pass in and out of a building should be provided with some sort of a door, secure, at least, against the intrusion of rats or other destructive animals, at night. Such a door may be arranged to fall into place vertically, or it may act on the trap-door principle, falling flat or at an angle, according to circumstances. I shall consider the three kinds together, for convenience.

These doors are generally opened and closed by a cord, which is carried over pulleys to a point where it can be conveniently reached. Some plan by which the same cord can be utilized to operate the fastening as well, is desirable as saving time and trouble.

The door recommended for the model house in an early chapter, falls to an angle of about forty-five degrees. This is roughly shown in Fig. 51. The bolt should be heavy enough to fall easily into place, when the cord is slackened; weight is the only requisite, the shape may be almost anything that will slide up and down; hence almost any scrap of iron three or more

inches in length, with a hole near one end, can be utilized, by making the anchorings to fit. A plug of wood should be driven into the hole and the nail by

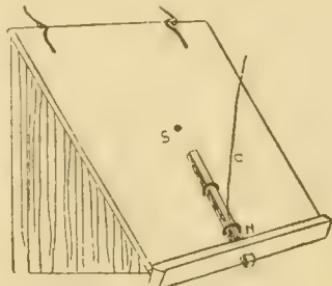


Fig. 51.

which the cord is attached is to be driven into this plug; this will be found to be a better plan than to attempt to fasten the nail by clinching.

The door is hinged at the top so as to be operated by the cord, *c*, attached to the bolt near the bottom.

The bolt is held on the door by two staples, through which it slides freely. The cord passes under the lower staple; thus when the door is down and the bolt in place, a slight tension on the cord withdraws the bolt and a further tension raises the door. The bolt in its upward motion is stopped when the nail by which the cord is attached touches the staple, or a special nail, s, may be used for that purpose. Ordinary U staples may



Fig. 52.—U STAPLE.



Fig. 53.—M STAPLE.

be used for attaching the bolt, but if the wear on the lifting-cord is objectionable, a pulley on a M staple should be used for the cord to pass under. (This will be described later on in this chapter.) When a pulley is used, the nail s should stop the bolt before the nail which attaches the cord clogs the pulley. It would be well to connect nail s and the main cord by a short cord which will just come taut when the bolt is down.

The socket into which the bolt drops may be a staple or it may be merely a hole in a strip of wood, as shown in Fig. 51; this latter will be found to possess certain advantages. Whatever is adopted for this purpose, provision must be made against its becoming clogged with mud, carried on the feet of the fowls passing over it; if the hole is open below, as shown, it will not fill easily, and it can be readily opened, in case it should, in time, become clogged.



Fig. 54.

The hinges may be of the ordinary strap or half-strap pattern, but a wire hinge is very serviceable, and I advise its use because it need only cost the time required to shape it. Fig. 54 shows a hinge which I invented for this purpose; this and other forms of small hinges, which will be shown later, all are intended to be driven with a hammer, like nails, as was the case with the wire gate-hinge I gave a few pages back. It is certainly a great advantage to have a hinge that will do the work, can be driven about as readily as a nail, and can be made easily from scraps of wire that would otherwise be useless. As the hinge is as secure as a clinched nail, it will at once be seen that a large wire is not needed for the inch-thick materials that com-

monly used; wire one-twelfth of an inch in diameter is strong enough, and a length of about two-and-a-half inches will make each part. The loops should be made just large enough, since the hinge would be loose, if they are too large. In adjusting it the spike-end of No. 2 is to be driven into the corner, at an angle of about twenty degrees, until the loop enters the wood a trifle; the L-end is then driven down, after which the spike-end of No. 1 is driven into its place through the loop of No. 2, and the L-end clinched into the wood. After driving a hinge or two, it will be an easy matter to adjust the loops properly. The ends of the wires will not need sharpening if they are cut diagonally; the point of the diagonal end should be directed as shown in the drawing, to prevent spreading under the hammer, and to hook into the wood; the wire will "lead" in whatever direction the point is slanted.

\* \* \* \* \*

FOR the drop-door, which is not hinged, the drop-fastening shown in Fig. 55 works to perfection. It is merely a piece of wood, or iron, so hinged to the top of the door by one end that the lifting-cord, attached to the other end, operates the fastening automatically. Any convenient method of hinging may be adopted; the drawing shows a M staple made in the end of the

Fig. 56.

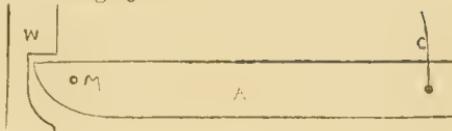


Fig. 55.

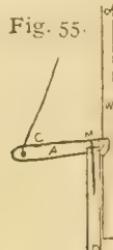


Fig. 57.

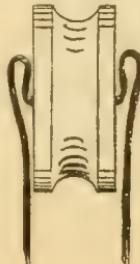
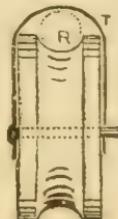


Fig. 58.



fastening and driven down into the top of the door. (See directions for inserting staples into pulleys, etc., latter part of this chapter.) As will be seen in the enlarged drawing, Fig. 56, the end of the fastening, A, enters a recess or pocket in the wall, w. It would be practically impossible to raise the door from the outside, when the fastening is down, but security against the use of a pry is easily provided, by having the lower edge of the door protected, as shown in Fig. 55. The lifting cord, c, carries to a pulley directly above the door; tension at first raises the fastening to the perpendicular and then pulls the door up. When the door is again dropped, the fastening falls outward naturally, thus locking automatically.

Of course a drop-door must be provided with "ways" to slide in; the simplest plan is to nail a strip, about twice the length of the door and a trifle thicker than it, upon the wall at either side of the door; then another pair of strips on these, projecting over the edges of the door, and a nail in the wall above to stop the door at a proper height, completes the arrangement. A loop in the lifting-cord to hook over a convenient nail or peg will hold the door open at a proper height. In the house designs given, the cord extends to near the outer door; hence it is not necessary to enter the house to let the fowls out.

\* \* \* \* \*

In carrying the lifting-cord to a point where it can be conveniently reached, small pulleys are needed; my plan for making these is to cut a groove around a braid-spool, (Figs. 57, 58,) although a short spool of any sort might be made to answer. Spools are generally thrown away as useless, but they can be turned to a variety of uses. But of course these small pulleys can very readily be made by whittling a piece of hard wood to the proper size, boring a hole in the end of it and then sawing it in sections of proper thickness. In many localities, the stems of the common elder will save the trouble of whittling and boring.

In putting a pulley upon a staple of any pattern, the wire is to be shaped for one side, then threaded into the pulley before the other side is shaped. The M staple is easily driven when in a pulley, but it would be very difficult to drive a U staple without injuring the pulley. The staple should be driven deep, so that the cord cannot jump out of the groove.

Often a pulley can be better put up by driving a wire-nail through the hole, in which case a very good way to keep the cord in its groove is to bend a strip of tin over it, both ends of the strip being held by the nail, as shown in Fig. 58. This strip should be so shaped that it will not bind on the edges of the pulley, thus interfering with its free movement.

## ON THE PERCH.

\*\*\*

**J**N MAKING PERCHES extremes should be avoided, I think. Many contend that they should be broad and flat, like that shown in cross-section at Fig. 60, or even broader than that; the claim being advanced that such a perch prevents the evil of "crooked breast-bone," in the heavier varieties of fowls. I never could quite believe this, for the reason that such a perch is uncomfortable for the fowl as is evidenced by the fact that a perch which can be grasped by the toes is preferred always, when the fowl is given any choice in the matter, and this is borne out by a study of the foot itself. If the fowl's leg be bent into the position which it must assume when its owner is sitting at ease, the toes will automatically close, and they cannot readily be spread, but if the leg be straightened, the toes spread of their own accord. Hence it will be seen that if the fowl is compelled to sit all night long in a position which cramps the foot, its weight will necessarily be thrown on the breast-bone, (the very thing to be avoided as much as

possible), while if given a comfortable perch, the weight rests where it should rest,—on the feet.

I think the whole trouble arose from the injury done by perches that were too small; a small round perch is as much a source of discomfort as a broad flat one, and, of course, more liable to do harm. It is also true that when the corners of the broad perch are much cut off, the same harm may be done as by a round perch,—a comparison of the curve in highest part of Fig. 62 with 59 will show this.

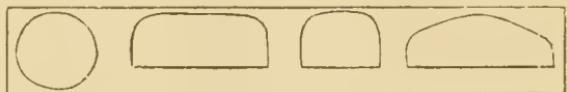


FIG. 59.

60.

61.

62.

In view of the foregoing facts, it seems evident that the best and safest form of perch is that which the fowl can grasp without discomfort and is, at the same time, flat on top; such a perch is shown in section at

Fig. 61. It is merely a two-inch-square bar, with the upper corners rounded off a trifle. A 2x4 scantling, about five feet long, ripped through the center, makes the two perches needed for the house designs given in previous chapters.

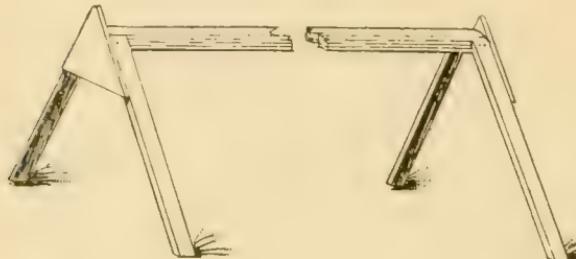


Fig. 63.

Methods for supporting the perch at a proper height are various. The old-time idea which sanctioned the arrangement of a group of perches lowest in front and gradually rising higher towards the rear, has followed the road of many other harmful notions in poultry culture,— for the reason that the fowls would struggle for the possession of the highest perch and this resulted in trouble and occasional injury.

In the house designs which I have given, the perch for each side rests upon blocks or strips attached to the walls and partitions; this, as explained, is a most

convenient arrangement, since the perch can be set on end in a corner, when not in use.

However, as it is often desirable to have the perch "self-supporting," I give a design for a trestle which

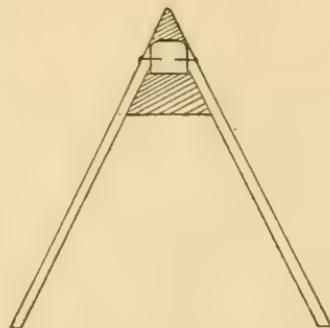


Fig. 64.

is easily constructed and which meets all the requirements fully, I think. The two ends are shown in perspective in Fig. 63, and detail of the end is given at Fig. 64. Of course the perch may be almost any desired length, but would be unwieldy if longer than eight feet. A length of two-and-a-half feet will be sufficient for the legs of the trestle, which may be made of 2x4 stuff, although a lighter material would answer for the purpose. As will be seen, the ends

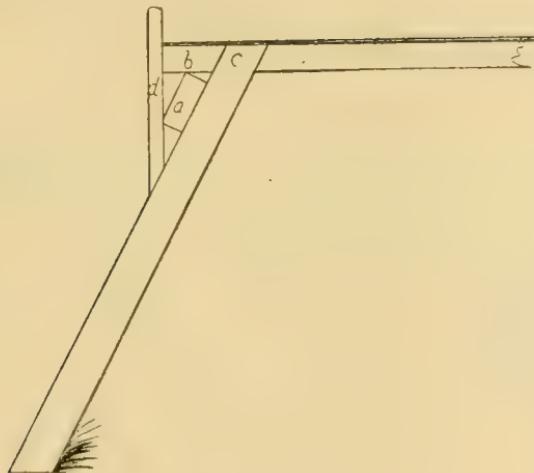


Fig. 65.

at the end, for, if some such protection is not provided, the fowls would crowd each other off.

Such a trestle, if not roughly tossed about, will need no braces for its legs. Braces on a trestle perch are inadvisable, because they soon become befouled with the droppings and are not readily cleaned. An unobjectionable method of bracing the legs may, however, be required. This is shown in Fig. 65. As will be seen, the legs, instead of being set at right-angles with the perch, have their lower ends some distance beyond the end of the perch, and thus out of the way of defilement. This position braces the leg of itself, in one direction; a block nailed across from one leg to the other, close up under the perch, makes the trestle perfectly rigid on its legs. In the drawing, *b* is a side view of a portion of the perch, *a* the end of the block just mentioned, *c* the leg and *d* a strip fastened to the end of the perch as a protection for the end fowl. The strip should be too small to tempt the fowls to perch upon its top. In this connection, perches should never cross, — to avoid soiled plumage.

are covered with a triangular piece, which not only serves to strengthen the legs, but also protects the bird



## ON NESTS.



**K**EPT IN THE ORDINARY MANNER on a farm, much is lost that should be turned to profit by providing suitable arrangements for nesting, and training the hens, when young, to regular habits. The hay-loft, the manger or an inaccessible place under some building, — these are not

number of eggs thus saved, (as compared with the slip-shod method), amply repays him for the trouble and expense.

Of course a cheese-hoop or a box of proper size will answer the purpose and prove acceptable to well-bred hens, but some form of nest that will close itself when

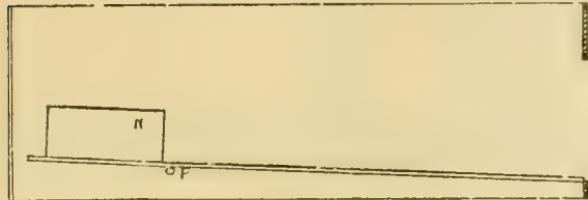


Fig. 66.

profitable nesting-places, and yet on many farms the eggs are sought in such places, "year in and year out."

The fancier, as a rule, provides nest-boxes of some sort for his stock at all seasons of the year, and the



Fig. 67.

a hen enters it, is desirable for a number of reasons. Chief among these is the fact that two hens will sometimes struggle for possession of a favorite nest, and this may result in broken eggs. Then, too, the secret

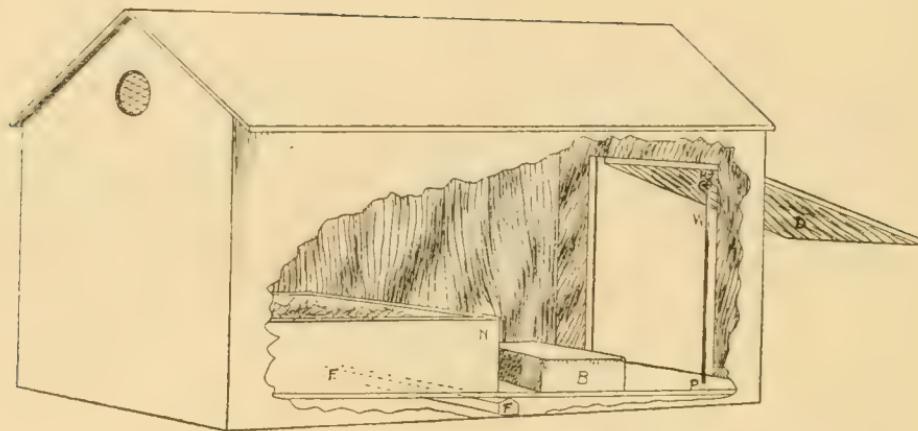


FIG. 68. — AUTOMATIC NEST-BOX FOR LAYING HENS.

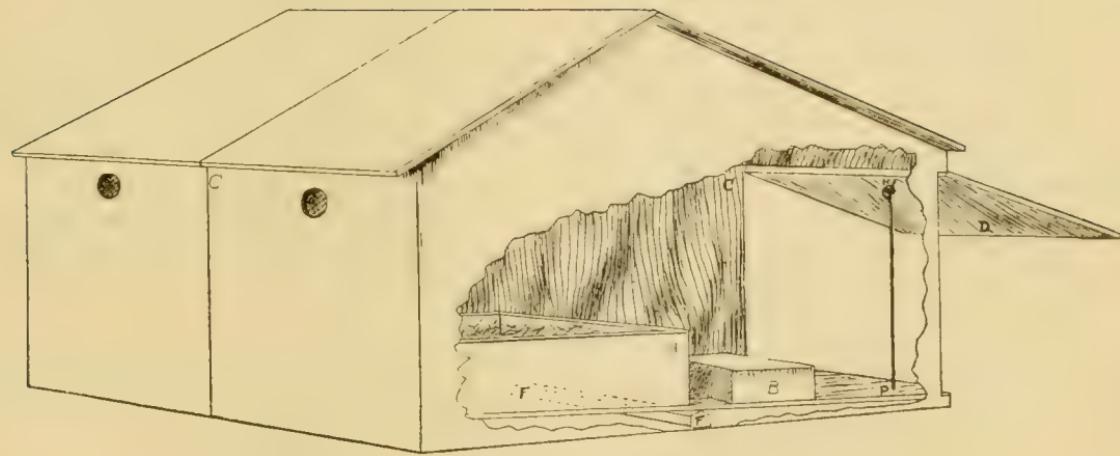


FIG. 69. — AUTOMATIC NEST-BOX, (DOUBLE.)

nest is preferable to an open nest, because the egg-eating habit is usually acquired by finding a broken egg in plain sight, — which could not happen in a regular nest-box. In Figs. 66 and 67 is roughly shown a plan which someone has devised for shutting out intruders when a hen has once entered the box. By this plan, the board on which the nest-box rests is long enough, and so balanced, (at P), that the hen's weight on the nest elevates the end B to near the top of the entrance. But this plan is open to a number of objections, the most serious of which is, perhaps, that the nest must fall through such a distance that only a very fearless hen would enter the box a second time.

The best idea for a self-closing nest-box which I have met, is that shown in Figs. 68 and 69. The nest, N, is counterbalanced on a base-board, P, by a weight, B. The door, D, is connected by a wire, w, with the base-board, the "eye," H, in the door standing out about a half-inch, to give it proper leverage in elevating the door. The weight, which may be a brick, or anything which, by experiment, is found to do the work correctly, is adjusted on the base-board at the point where it will hold the door open when the nest is unoccupied, but will be overbalanced by the weight of a hen on the nest. Thus when a hen steps upon the nest, her weight causes the outer end of the base-board to rise the short distance necessary to relieve the

strain on the wire, and the door closes by its own weight. When the hen leaves the nest, the weight is ready to open the door and keep it open.

Fig. 69 is the double nest-box referred to in an early chapter. The construction of the two boxes is alike except the roof. The door may occupy all or only a portion of the front end. Probably it would be well to have a large hole in the door, covered with screen-wire to serve as a window.

It is best to have a roof on the box, rather than a flat top, even if to be used only indoors, because a roof will be an attractive perching-place. Many times there is an advantage in having the nests outdoors, especially if used for setting-hens in warm weather.

A portion of the roof is to be hinged, for convenience in collecting the eggs, and the opening for this lid should be of a size to allow for the removal of the nest itself, when occasion requires. The small box containing the nesting-material need not be attached to the base-board.

\* \* \* \* \*

#### WIRE HINGES FOR NEST AND OTHER BOXES.

The hinges for the lid may be made of wire, since there will be very little strain on them. In Figs. 70,

71 and 72 I give drawings for adapting the wire hinge to any situation in which it may be needed. The parts of these hinges are to be driven with a hammer, like nails. In each hinge, part 1 is the same and is driven last. Part 4 is an ordinary wire staple. In making the different parts, care should be taken to cut the ends diagonally, so they will not require sharpening, and the cut for each end should slant as shown in the drawings, in order to make the wire "lead" in



Fig. 70.

a direction to clinch the part firmly. The short end is, of course, driven first, and then the anchor end, as shown in Fig. 71. Sometimes it may be most convenient to drive the two short ends of a complete hinge separately, and then hook the pieces together and sink the anchors. The tyro may not succeed very well in driving these hinges, but after a little experience, he

will find it easy. Two hinges like 72, with the ends of the staples clinched right and left, will answer for each lid.

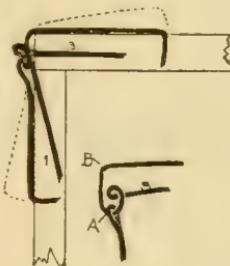


Fig. 71.

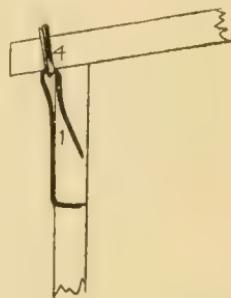


Fig. 72.

These hinges will be found useful for boxes of various kinds, when made of suitable sized wire. The size of the loop must be regulated by the size of wire used; if the loop is too large the hinge will be so loose as to be unsatisfactory, — a trifle larger than the wire itself is the proper size.



One of "LEE'S IDEAS" in the New England Fancier: — To make the hen go on the nest, place a small card vertically upon the dotted line, move the page near the face, so the edge of the card will almost touch the nose; look steadily at the picture and the hen will appear on the nest.

## ON FEED-TROUGHS, ETC.

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**L**ET THEM "PICK UP" THEIR LIVING is a good rule where forage of a suitable kind is plentiful, but it is not a good rule where the fowls or chicks are fed in their yards, as they must be at certain seasons of the year. I do not at all advise the extreme of keeping grain in a "self-feeding hopper" where the poultry, young or old, can have access to it at all times, however. Poultry in confinement should be fed regularly, the old stock twice a day and the young oftener according to its age; young chicks should be fed by the old-time rule of "little and often," while experience alone can tell the proper amount to feed grown fowls. Some solons will say the rule is "just so much as will be eaten up clean" (and some editors who ought to know better use that stereotyped advice), but in feeding Asiatic fowls that rule will result in disaster every time. I find by actual experiment that what will keep Leghorns in good condition will also keep Brahma, while if more is fed to the Brahma, (they would "eat up clean" nearly

double the quantity), they become so fat as to be unprofitable. This explains why the Asiatic varieties are generally not as profitable as American varieties, when given free range about a farm,— they soon become too fat. In passing, it might be pertinent to ask, is any kind of stock profitable when given the liberty of the farm, and permitted to eat its fill of anything it likes, at any and all times?

In feeding grain, I have already advised scattering it through some sort of litter, and that advice is good at all seasons and for young or old stock; the exercise of scratching for it is a benefit always. This is one strong reason why I advise against the self-feeding hopper.

The plan followed in ye olden time for separating the young chicks, etc., from the older stock, at feeding time, is commendable, although it is certainly wiser, by every consideration, to keep the young stock always separate until well matured. The plan referred to is that of making a coop of lath or other slats wide

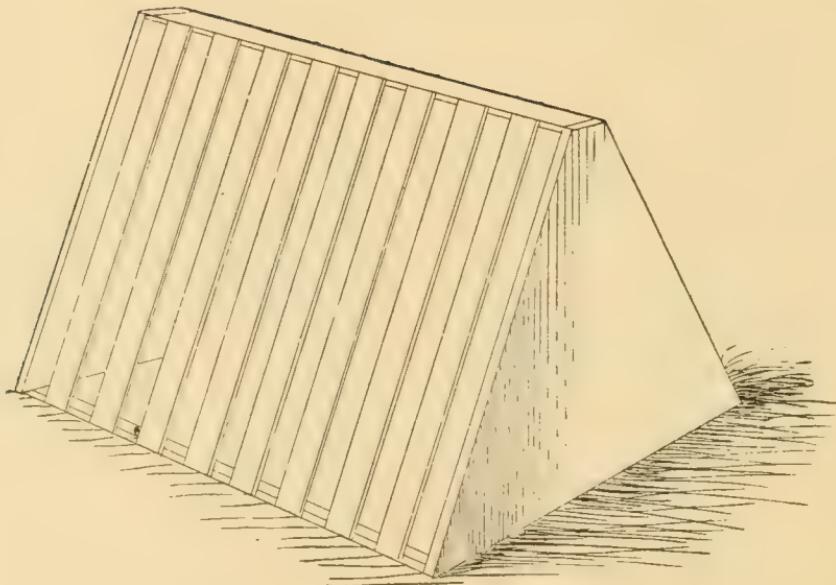


FIG. 73:—

OLD-FASHIONED FEED-COOP FOR GROWING CHICKS, TURKEYS, ETC.

enough apart to allow the youngsters to pass through, the base of the coop being broad enough that the old birds cannot reach the chicks while eating. Such a coop is roughly shown in Fig. 73. It should be always roomy inside. If it is moved to a fresh spot each time it is used, there will be no trouble from feeding on the ground, as is usually done; but, of course, a board floor which can be scraped and washed, is preferable, and a regular feed-trough is better still.

In feeding soft feed of any kind, a trough to hold it is always advisable, not only to prevent waste from scattering, but to keep the stuff clean and avoid those conditions which produce sickness, and which are almost certain to develop where soft feed is given to feathered stock, of any age or kind, on the ground. An old-fashioned v-shaped trough, such as is ordinarily used for feeding hogs, is very much better than nothing, and little time or labor is required to make it. Such a trough is easily cleaned out, with a hoe, or scraper of some kind, and a dash of water. But such a trough is open to a serious objection in that it does not protect the contents from trampling, by which they may become more or less unfit for use.

It is wise, then, to so construct the trough that the birds must keep their feet out of it, and the readiest plan for this is to place a strip a few inches above the top of the trough. This might be done by erecting a

small standard at each end of the trough to which the strip may be nailed. As this strip would be stationary it would, of course, interfere with cleaning the trough, hence I invented the arrangement shown in Fig. 76, possessing other advantageous special features.

A trough longer than four or five feet is inconvenient to handle, but that length will accommodate the ordinary breeding-pen; if more room is required, then additional troughs should be provided, rather than a longer trough.

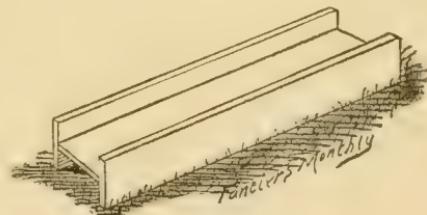


FIG. 74.

Fig. 74 shows the construction of the trough part of Fig. 76. The bottom board should be thick enough to not warp, — say one and one-fourth inch, or more, if of soft wood, — and about seven inches wide. The sides may be inch thick, if of sound wood not liable

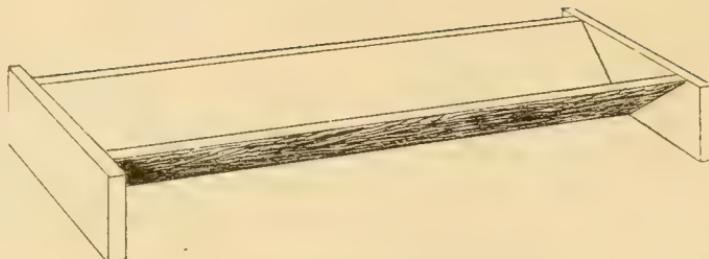


FIG. 75:— COMMON V-SHAPED TROUGH.

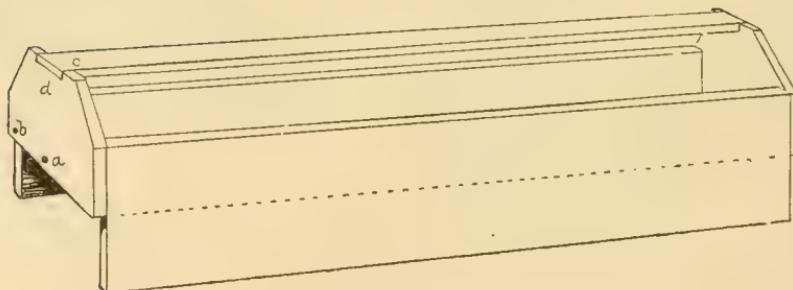


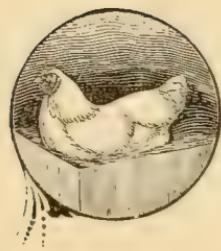
FIG. 76.

to split, and about six inches wide will give sufficient depth to the two sides. The ends are held together by the top strip, and are merely hinged to the trough by a screw or peg, A, Fig. 76, at the center of each end. Thus the trough can be held free from the floor, using the strip as a handle, and turned the "other side" up. To hold the ends in place a pin is inserted at B, which is removable, of course. It will be noticed that when one trough is set for use the other is open, with nothing to interfere with scraping it out. If turned each

time it is used, there will seldom be any need of cleaning, for it will be cleaned by the natural action of the atmosphere.

The trough part, like Fig. 74, could be used alone, if made long enough to avoid waste of feed at the open ends; in using it in this form, it can be turned over by the toe each time.

This is an elaboration of ideas which I have heretofore presented in the "Pacific Coast Fanciers' Monthly" and the "Ohio Poultry Journal."



## ON WATER-VESSELS.

\*\*\*

**G**ANY TIMES THE FEATHERED-STOCK suffers because a supply of water has not been provided by the owner. When given free range, with access to a never-failing stream, the problem solves itself for most seasons of the year; but probably a very large majority of those who keep poultry are not so fortunate. It is true that the fowls will drink from a chance puddle or swallow snow to quench their thirst, but neither method is healthful, or should be considered an excuse for failure to supply pure water.

In winter, fresh water must be supplied every morning, unless it can be kept where it will not freeze over during the night. The several forms of so-called "non-freezing" drinking fountains have never become popular, because of the expense, in the first instance, and constant trouble, afterwards. A wooden vessel is best to use, where the water is liable to freeze, since it will not burst so easily as metal or stoneware, if it should be forgotten at night.

In summer, the problem is to keep the water from becoming foul by the heated atmosphere, which is sure to occur where it is set out in an open vessel. Some form of "fountain" is the thing, then, to keep fresh water always before the feathered stock. Several of these are advertised in the publications devoted to small thoroughbred stock, which can be purchased at small expense. If it is desired to save all expense by making the fountain at home, then it is only necessary to hunt up an old jug and a cup, or other small vessel, to hold the supply. A cracked jug can be treated with putty or plaster-of-paris, and made to answer, when fit for nothing else. It must be air-tight when the nozzle is under water, (Fig. 78), else the fountain will run dry before its time. The plug, shown at Fig. 77, is a piece of wood, hollow and with an opening, o, at the proper height for the level of the water in the cup; an elder-stem will make this plug, or the central hole can be bored and the plug whittled into shape around it afterwards. The opening in the side must be below the top



FIG. 77, THE PLUG.

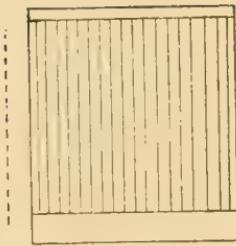


FIG. 78, COMPLETE FOUNTAIN.

edge of the cup and the central hole must be large enough to permit a large bubble of air to pass upward through it, to allow for a free flow of the water. The end of the plug which is fitted into the mouth of the jug should be wrapped with something to make an air-tight fit. The pressure of the atmosphere prevents any overflow, while the weight of the water keeps the cup full so long as there is any in the jug. The advantage of a jug over a tin or iron vessel, aside from greater du-

rability, is that it keeps the water cool in hot weather, by the evaporation of moisture from the outside.

In use the jug is merely leaned up in a corner or against a post, its weight resting on the lower end of the plug. Fig. 78 shows the "fountain" complete. It can be placed on a small shelf, out of harm's way, in the scratching-pen, held upright by a nail in the wall at either side of the jug. It can of course be used the year round, if protected from freezing.



One of "LEE'S IDEAS" in the Pacific Coast Fancier's Monthly: To put the speckled hen in the coop hold a small card vertically on the dotted line, move the page near the face, the edge of the card almost touching the nose, then look steadily at the picture and the hen will appear in the coop

## ON THE BROOD COOP.

\*\*\*

**N**O ONE CAN RAISE POULTRY with as complete success without special preparations as can be done with a little extra care in providing accommodations separate from the general flock for the setting hen, and for the brood, when hatched. From this latter phrase, it will be inferred I do not recommend artificial methods in raising poultry, and that is true, with a certain exception. I believe artificially-raised chicks are, from the very nature of things, deficient in stamina, despite all the apparent proofs to the contrary which may be gathered; this belief rests on the fact, coming more and more to be understood by thoughtful people, that the magnetic influence of mother-love, or a thorough equivalent for it, as in the case of a good foster-mother, is essential to the best development of the young of any species. I certainly believe this vital current is necessary, in a less degree probably, during the process of incubation. For this reason I have always advised breeders to stick to the natural method, unless compelled by necessity

to use machines. Of course, for broiler raising, the matter of proper maturity is of no moment, and hence the machine method is practically the best for such establishments.

By the arrangement of buildings suggested in previous chapters, a special brood coop will not be necessary, where only a few chicks are raised each year, as a good mother hen will care for two or three broods together, (hatching arrangements should always be made with that end in view, and it is of special advantage in the event of poor hatches), and the chicks should be placed on new range, when weaned, thus giving place to broods of several ages, during the course of the season.

But special coops for the hen and her brood are frequently a great convenience and sometimes a necessity, hence I give a design and some hints on the subject. A glance at Fig. 79 will make it plain that the design provides shelter and a roosting-place, with protection for the brood at feeding time. Even the mother hen can

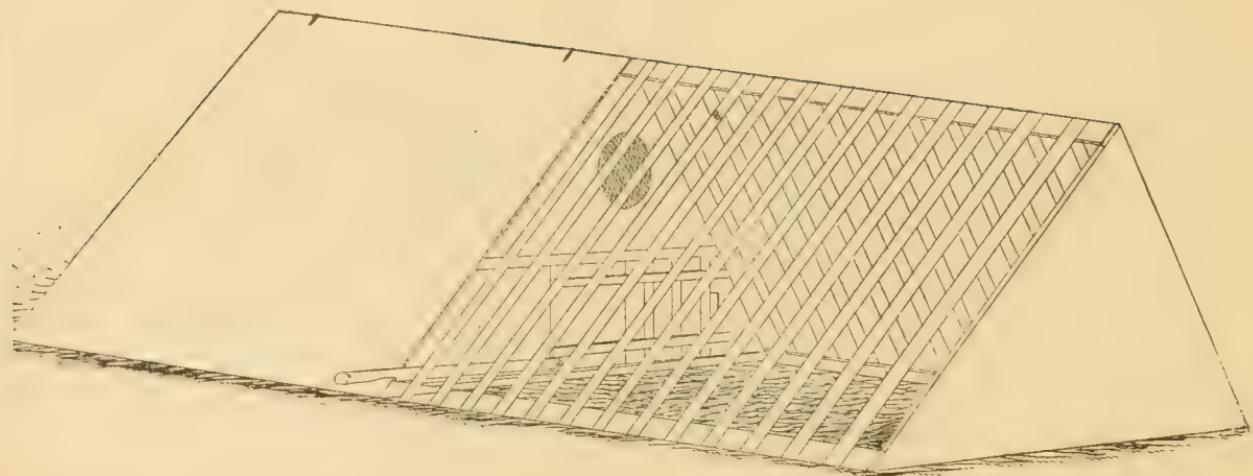


FIG. 79.—CONVENIENT BROOD COOP.

be shut away from the feed, by confining her in the closed portion of the coop; this is necessary with some hens that exhibit a mania for scratching, by which the food is wasted and oftentimes the chicks injured. However, the coop is especially designed to indulge the scratching propensity. The closed portion of the coop is floored, but the slatted space is not, and as the width of the coop is such that it can be drawn lengthwise between the rows of vegetables in a garden, or corn in a field, a fresh scratching-ground can be thus provided each day, while the chicks can range about at will. The chicks will, as a rule, be weaned and on their regular run before they are large enough to damage the plants. I think I need not stop to enumerate the many advantages of this plan; for they should be patent to all, with a second's thought.

This coop can also be used for the hen while setting, thus saving trouble from the very beginning. Her supplies and dust-bath will thus be out of the reach of the other fowls, and no disturbance will arise when she leaves her nest for an airing. One side of the covered portion of the coop is hinged, for convenience in cleaning, etc.,— by wire hinge No. 4, see Fig. 72, page 63. Details of the framework can be made out by an examination of the drawing, I think.

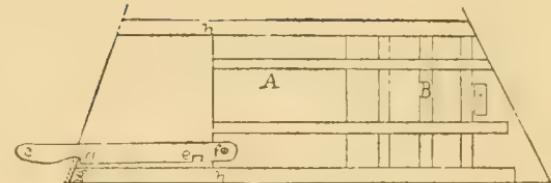
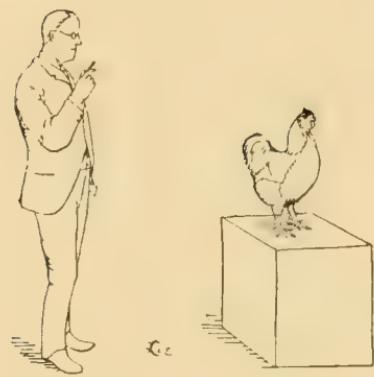


FIG. 79a.

The arrangement of the small inside door is shown by Fig. 79a. This consists of a solid door A, shown as covering the opening into the coop, and a slat door B, on the same battens, and operated together, in the "ways" h, by the handle c. The stop, i, and notch, d, in the handle, which simply catches over the main framework, g, hold the door closed securely at night, and notch, e, secures the slatted portion of the door at the opening. The door can be withdrawn through the slats of the coop, to let the hen out, a small notch being cut in frame, g, if necessary to allow its free passage. The handle moves freely upon the screw, f, falling into place by its own weight.



## ON THE SHIPPING COOP.

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NE ANNOYANCE which shippers too often inflict upon their patrons is unnecessary weight in the materials of the coop. So long as the Express Companies usually charge double first-class rates on shipments of thoroughbred poultry, (and sometimes require the shipper to sign an agreement releasing them from all responsibility connected with the shipment), it is certainly the duty of the shipper to see that his patron is not forced to pay this exorbitant charge on a useless weight of old lumber.

Of course the requisite strength must not be sacrificed to lightness, but the tendency is generally in the direction of overestimating the size of the materials required for a coop of a given capacity. Mr. Felch once sent me a pen of Light Brahmans in a coop very similar to that which I illustrate in Fig. 80, made throughout from three-eighths inch pine and no piece of the frame more than three inches wide. The coop went from Natick to Boston and thence to Indianapolis, (just a-

bout one thousand miles), arriving in good order. As Mr. Felch has without doubt shipped more thoroughbred fowls than any other fancier, living or dead, his method may be considered near enough perfect to serve others as a guide.

My plan is to secure an old box, made of materials of the requisite strength and lightness, of proper size for the number of fowls it is to contain; this can be easily and quickly converted into a shipping coop as follows: if for pairs, the box should be about ten by twelve inches, and, if it is ten or twelve inches high, with a cover, it will make two coops with the addition of six 36-in. laths, for corner posts. The sides of such a box are to be ripped into four pieces, without taking the box apart; the strips on which the bottom and lid are nailed should be about three inches wide, and the part which is to serve for the upper portion of the coop-frame may be somewhat narrower. These latter should be nailed at the corners before sawing, if they are not already secure. The frame is then com-

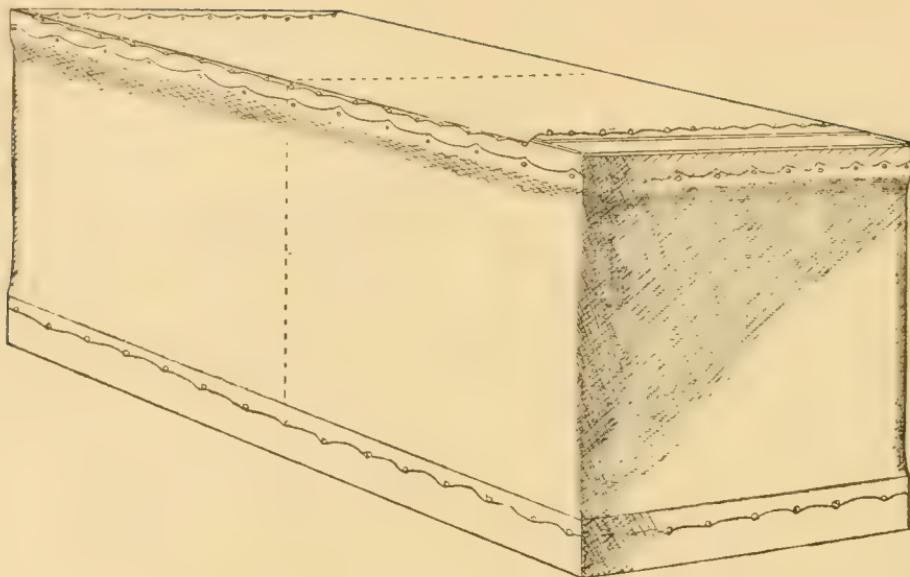


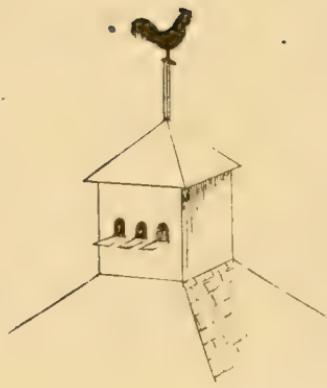
FIG. 80, THE SHIPPING COOP.

pleted by using four half laths for corner posts and nailing a piece of lath across the top, two inches from each end, for the ventilating openings. These top pieces should be securely nailed because they will be used as handles by the Expressmen. The cheapest grade of unbleached muslin is commonly used for covering the sides and top.

Such boxes can usually be had for the asking at any store, and a supply should be looked after in advance

of needing them. I have sometimes had to pay five cent each for good boxes; the laths cost fifteen cents per hundred, hence ten cents would be a very liberal allowance for total cost of the materials in each coop. Twenty minutes should suffice for labor, and less if a number be constructed at one time.

In making a coop large enough for a pen of fowls, it is wise to erect an additional lath post at the center of each side, these to be connected across the top.



## PEDIGREE BREEDING, AND CONCLUSION.

THE PRECEEDING PAGES have been devoted to the idea,—1st., of helping those who are keeping poultry for the sake of the benefit they get from the occupation, in one way or another,—2nd., of pointing out to those who have not heretofore considered poultry keeping of sufficient importance to pay for the trouble of making proper provision for it, that such arrangements can be easily and cheaply made as will convert the inhabitants of the poultry yard into a source of pleasure, as well as profit, instead of a nuisance and, generally, a factor of unknown value in household economics.

But the present chapter is for scientific breeders, — a class which, of course, includes nearly all fanciers, as well as the experimentalists. I combine my own article upon THE METHOD, as given in the Ohio Poultry Journal, with I. K. Felch's article on THE MATINGS, which appeared some years ago in a paper which has since been merged into the Western Garden. The system of mating is of far too great a value to be al-

lowed to rest in obscurity, and the arrangements for caring for the breeding stock serve so well as auxiliary to it, that it is fitting they should be presented together.

Naturally, the accommodations for the fowls will claim first attention.

\* \* \* \* \*

### THE METHOD.

"In thoroughbred poultry breeding there are many difficulties in the way of keeping a complete pedigree, which do not exist in the case of other high-bred stock. But the effort with any real fancier is always towards improvement, and as there can be no improvement of permanent value that does not result from careful and systematic effort, the subject of pedigree breeding is of at least a certain amount of importance to him. Under present methods of hit or miss breeding, any improvement which may develop

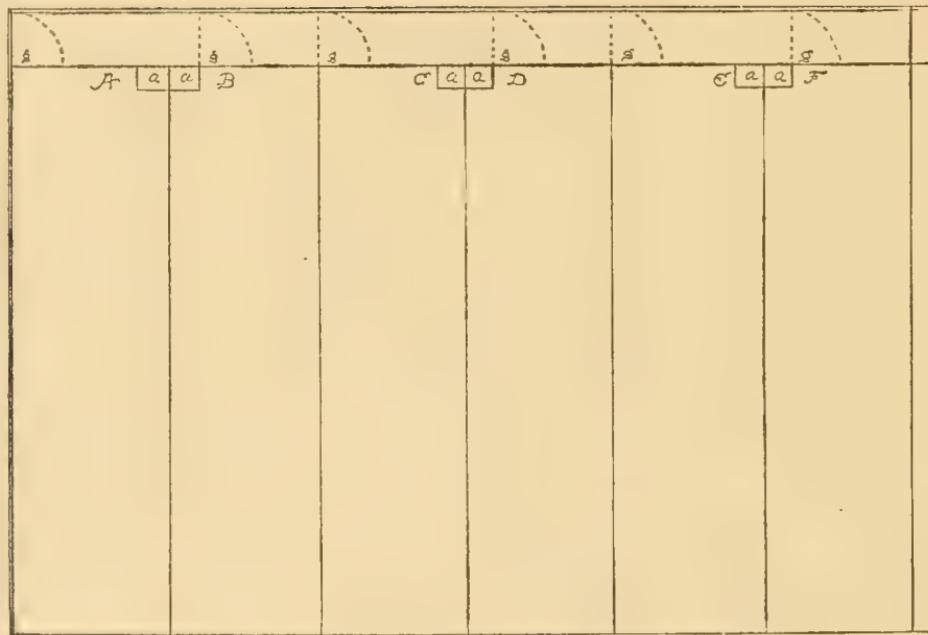


FIG. 81.—ARRANGEMENT OF PEDIGREE BREEDING YARDS.

itself is mere chance, and although the breeders are quick to take advantage of such adventitious circumstances and have a better opportunity to do so in their line than in any other line of thoroughbred stock, yet the fact remains that their work would be of far more value to themselves and to others if they knew just how the 'sports,' of whatever sort they may be, came to exist, and what birds in their yards produced them. The whole difficulty of keeping a record of this kind of course exists only with the female line, and any system of pedigree breeding must look to keeping a separate record of the product of each female concerned. This of itself would be a valuable record, in any branch of improvement of fine poultry, and it ought to be looked to in the matter of egg records long enough to cull out the unprofitable layers from the flock anyway. But pedigree breeding contemplates a careful study of all the points in the variety under consideration which can be improved, and it is to help in such work that I have devised the plan outlined in the accompanying diagram. This shows accommodations for only six females, but is of course capable of being extended to any number advisable, the number varying with the different breeds. The space allotted to the pen of fowls is divided into as many separate pens as there are females to be used, and a narrow passageway is cut off along the ends of all these pens, which pas-

sage is just the width of the small gates leading into the single pens, as shown in the diagram. The accommodations for roosting consist of a box set on end, tall enough to provide three compartments; the lowest of these is for a dust-bin, that next above it is for the nest and the topmost is for the perch,—all to be closed at night by one door. These boxes are to be grouped in twos, both for convenience and because of the fact that the hens will be better satisfied if allowed to roost as near together as possible—since if given their own free will they always congregate for roosting. These roosting boxes are small, of course, since they are to only accommodate one bird most of the time; the male can be permitted to roost with one of the hens, to save building him a separate box. The partitions for the small pens need not have the ordinary board base at all, for the hens are not prone to fight, hence wire netting stretched from post to post will make those fences and the same may be said of the inside fence for the small run-way at the ends. Arrangements for feed and water will of course have to be made for each hen separately, the male being permitted to eat with one of the hens.

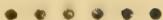
"The system, of course, contemplates permitting the male bird to run with each hen separately for a time during each day; and the work of caring for the birds takes time and some trouble, hence it is that the pen-

ning should be so arranged as to be most convenient; that is the purpose of the diagram. The idea is to avoid the necessity for catching the male bird each time he is changed from one pen to another. This is accomplished as follows: We will start with the male bird in pen A, with the gate between it and the passageway open. The two birds thus have the freedom of the pen A, and the whole of the passageway. When it is necessary to change the male to pen B, the attendant will call the male bird into the passageway or drive the female into her pen, according to the location of the birds at the time. In doing this he takes advantage of the instinct of the birds; a good breeding male will always protect his harem, and to do this he will walk behind the females; if they are being driven, or will run in front of them, if being called. If the hen is in the passageway she will be easily driven into the pen, because she considers that her home since all her housekeeping arrangements are there. Having once separated the birds in this way, the gate, g, is to be quickly shut and then the next gate opened, and the change is made. Some arrangement of ropes and pulleys can be adopted for opening and shutting the gates, if the attendant wishes, or if the birds are pets (as they should be in any fancier's hands) they will be easily changed when the attendant is standing near the gates.

"Those fanciers who delight in spending all of their spare time among their fowls will find they can keep the females separate by this plan with a very little trouble indeed, and the advantage of a separate record of the work of each female is ordinarily of such importance as to certainly overbalance any expense entailed by this plan. The runs for the hens will be long and narrow, necessarily, and this is better than to have them nearer square, for the reason that the occupants will get more exercise out of the same space so arranged. This is a point that is generally overlooked in laying out the yards for fowls, and yet it is an important one, where the fowls are somewhat restricted for space.

"I. K. Felch's plan for pedigree breeding is to use females that are sisters, and that of course simplifies the record not a little; at the same time the separate pen for each bird would be a great advantage in his plan, on account of the separate records. Of course, in the ordinary method of breeding it is not always possible to obtain a sufficient number of females that are sisters, and that, so far as my observation goes, is the only objection urged against pedigree breeding. The above plan overcomes that objection, as I have shown."

\* \* \* \* \*



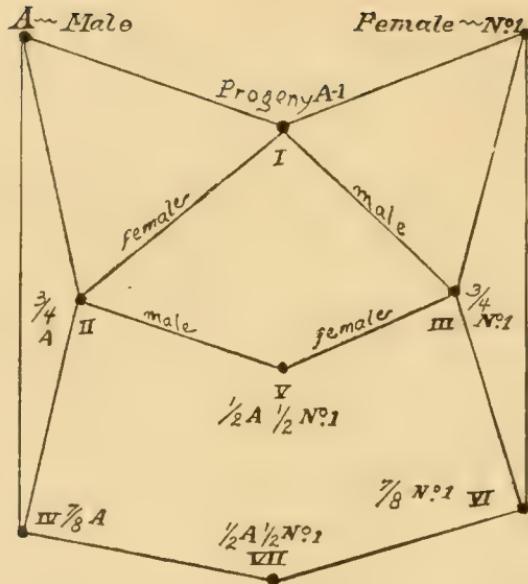
## THE MATINGS.

By I. K. Felch.

"In the creation one pair only was created. They represented pure and distinct in each the positive and negative properties, or life principle. Through their loins came a world of life and activity. So can we, with a single pair, the product of different crosses, reproduce the same type and color. If the following rule will be followed, we can in time produce millions without the loss of size, shape or color. This is an old story, and because of a derisive allusion and assertion that the rule was detrimental, we reproduce it for the benefit of the young and the thinking amateur. And to the old breeders who have never studied out the plan, we say, be sure you do understand it before you condemn it as detrimental. We care not how prolific the hen that became the maternal founder of the breed, that same prolific merit shall be retained. We ask only that the first pair give us three breeding seasons of life; we will never introduce a drop of foreign blood, and until time shall end the first pair shall be represented in the progeny. And the whole plain as mathe-

matics,—arithmetic—pedigree,—with the law that all breeding stock be in health, and color and shape of the first pair typical, and we start: [See Diagram on next page.]

"This is as far as it is necessary to go, for, in group IV we have reproduced the producing power of A, which mated to group VI produces VII,— which is half A and half No. I,— and groups I, V, VII are all half the blood of the two first ancestors. It matters not from which group you take them, but at the end of three years we have multiplied the individual A and No. I into many representatives from which we can at any time produce the reproductive power of A and No. I,— for, by the mating we produce the same blood, the same size, the same color, the same stamina, the same blood as in groups I, V and VII. Men may try to laugh a principle down because an idiot has failed in applying that principle,— one may condemn the rule because he has misapplied the rule,— but the laws of reproduction and mathematics remain. It is possible for a pair, as in the garden of Eden, to people another world by the selection of a pair from this, for there are Herculeses and Venuses to be found, and minds to direct that far outstrip those of the Old World. When we study that which brings the best health, the greatest productiveness, we are nearer perfection, or at least on the surest road to perfection and profit.



EXPLANATION: First year, Male A is mated with Female No. 1, producing Group I.

Second year, Male A with Females from Group I, producing Group II; and Female No. 1 with a Male from Group I, producing Group III.

Third year, Male A with Females from Group II, producing Group IV; and Female No. 1 with a Male from Group III, producing Group VI.

Additional matings: Males from Groups II or IV with females from III or VI, produce same result as Male A with Female No. 1.



CONCLUSION.

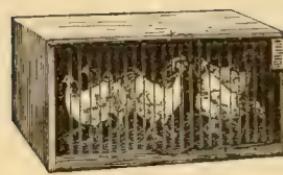
A few facts connected with this book are "out of the common" and may interest the reader.

The universal method with authors is to commit their thoughts to paper in some way,—writing, direct or by an amanuensis, or through a typewriter,—the matter so prepared being called "copy" when placed in the hands of a printer. I have used a typewriter for some years in the preparation of articles for the press and in business correspondence, without previous preparation of what I wished to say, and that suggested the plan of putting the book in type direct from my head, without preparing "copy" for it. From wide inquiry I have been unable to learn of a book ever having been prepared in such a manner, and those who have been long connected with the printing and kindred trades told me I was attempting a practically impossible task. I should say, in this connection, that I was once in the printing business, and learned a little of the compositor's art. Now that the work is finished, I am able to say that every line of the text was put in type direct, without "copy" of any kind, except those portions inclosed by quotation marks. This fact places the book among the curiosities of literature.

The initial letters heading chapters B, C, D, E, F, G, H, I, K, L, M, N, O and T were all made from the one character,



by the use of nothing but a small chisel. The number and variety of ornamental letters that an ingenious mind can work out from this character is truly astonishing, and I have been advised to secure a patent on it. But, like the other ideas in this little book, those who can make use of it are welcome to it. Printers who wish to exercise their ingenuity may correspond with the author concerning duplicates and the tools. There is no further need of paying from fifty cents to a dollar or more for initials when they can be quickly made and in great variety, and by keeping a supply of the blanks on hand, they will many times be used to advantage when a great rush makes it impossible to send away for such letters. It will be noticed many of the letters serve in more than one capacity,—M and W are usually interchangeable, likewise N and U, while the initials B and E, as here shown, serve for M and W. I have studied out hundreds of letters from this character, and yet I find new forms every time I look at it.











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